# Chapter 5. Analyzing Linear Equations

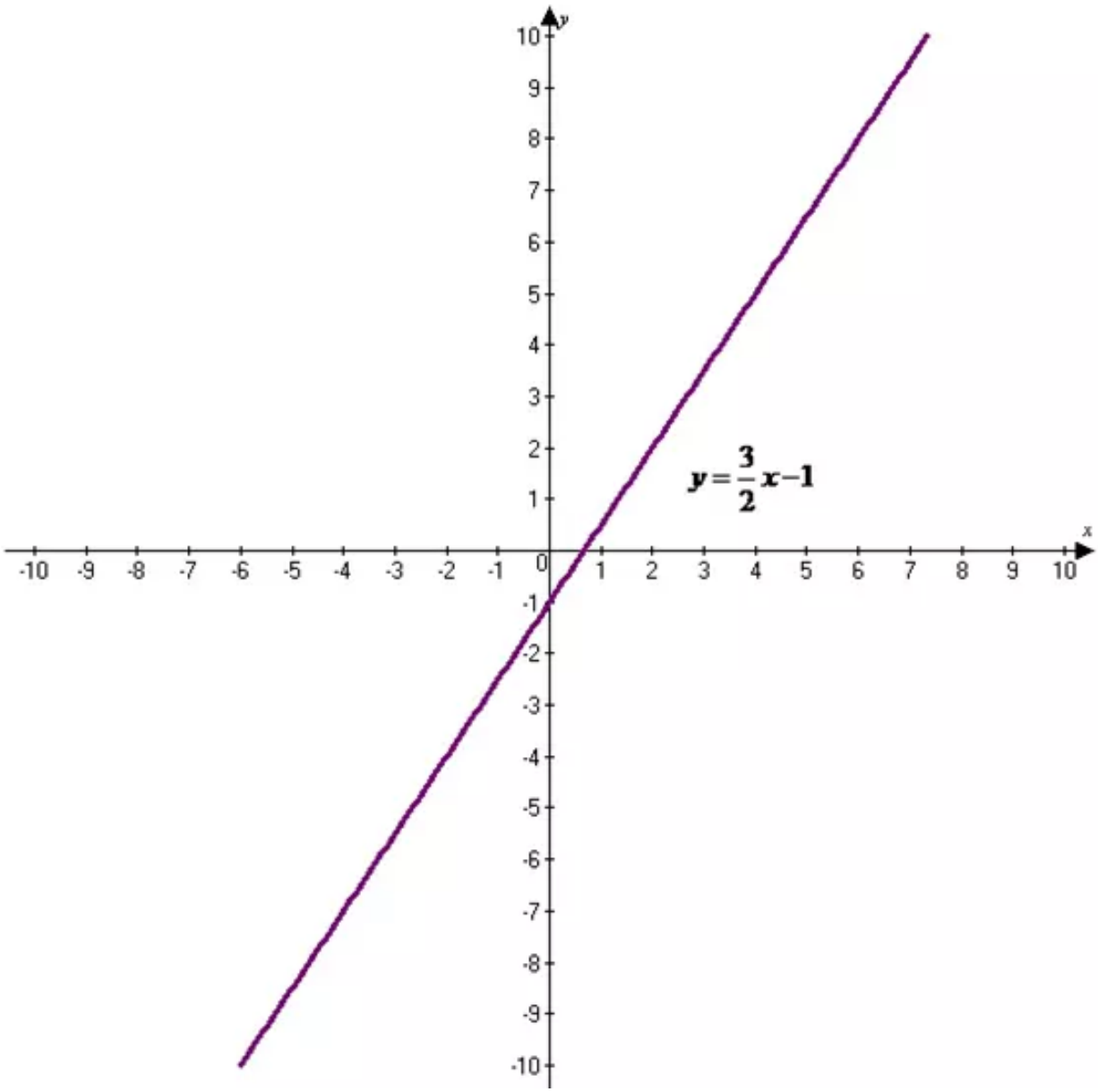
## Ex. 5.6

**Answer 1CU.**

Need to find the slope of a line that is perpendicular to the line shown in the graph

Given that equation of the perpendicular line $y = \frac{3}{2}x - 1$

Draw the graph the given equation of the perpendicular to the line



Find the slope

Two non vertical lines are perpendicular if their products of their slopes is $-1$. That is the slopes are opposite reciprocals to each other.

Here the slope of the given line is $\frac{3}{2}$

For perpendicular lines the slopes are equal to $-1$

$m_1 m_2 = -1$

$\frac{3}{2} m_2 = -1$ Replace $m_1$ by $\frac{3}{2}$

$m_2 = -1 \times \frac{2}{3}$ Dividing both sides by $\frac{2}{3}$

$m_2 = -\frac{2}{3}$

Hence the slope of the perpendicular line is $\boxed{m = -\frac{2}{3}}$

## Answer 1PQ.

Need to find the slope intercept form for an equation of the line that a satisfies the condition

Given that slope intercept form of slope

$m = 4$

And the slope intercepts form of $y$-intercept

$y = -3$

Slope intercepts form in the form of $y = mx + b$

Formulae of point slope form

$y - y_1 = m(x - x_1)$

Substitute the values in the point slope form and the equation we get

$y - y_1 = m(x - x_1)$

$y - (-3) = 4(x - 0)$ By distributive property $a(b + c) = ab + ac$

$y + 3 = 4x$

$y + 3 - 3 = 4x - 3$ Adding $-3$ on both sides

$y = 4x - 3$

Hence the slope-intercept form of an equation of line that satisfies $\boxed{y = 4x - 3}$

## Answer 2CU.

Need to give an example of two numbers that re negative reciprocals

A reciprocal is simply one pair of numbers that when multiplied together equal to one. If you can reduce the number the number to a fraction

For finding the reciprocal of a number, just divide one by the number

Let us take one example

Consider the number $-\frac{2}{3}$

For finding the reciprocal of a number just divide one by the number

$-\frac{2}{3}=-\frac{3}{2}$ Just divide out 1 by the number

Let us take another number $-5$

For finding the reciprocal of a number just divide one by the number

$-5=-\frac{1}{5}$ Divide 1 by the number

Hence these are the examples of two numbers that are negative reciprocals

## Answer 2PQ.

Need to write the slope intercept form for an equation of that line that satisfies the condition

Given that the line passes through

$(1,-3)$

And slope is $m=2$

Slope intercepts form in the form $y=mx+b$

Formulae of point slope form

$y-y_1=m(x-x_1)$

Substitute the point $(x_1,y_1)=(1,-3)$ and $m=2$ in the point slope form

Solve the equation we get

$y-(-3)=2(x-1)$

$y+3=2x-2$ By distributive property $a(b+c)=ab+ac$

$y+3-3=2x-2-3$ Adding $-3$ on both sides

$y=2x-5$

Hence the required solution the slope intercepts form of an equation of line that satisfies equation $\boxed{y=2x-5}$

## Answer 3CU.

Need to define the parallel lines and perpendicular line

First we define the parallel lines

Parallel lines have a same slope line in the same slope that do not intercept are called parallel lines

And two non vertical lines are said to be parallel lines if they have the same slope

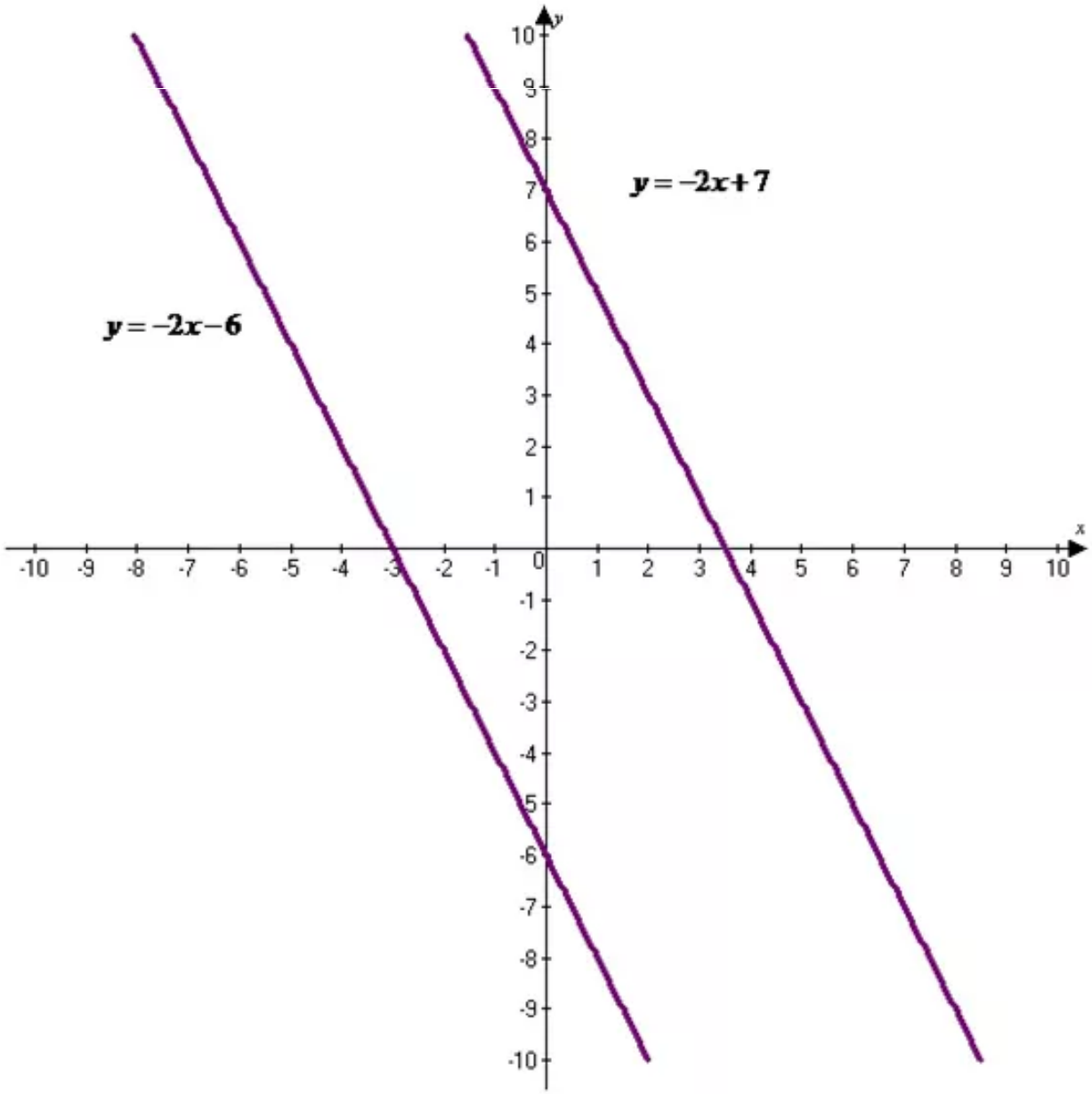
Example of parallel lines

Assume any two equations and draw the parallel lines

Assume equation of the parallel line

$y = 2x - 6$ And $y = 2x + 7$

Draw the graph in given equations




Hence it is parallel graph

Next we define the perpendicular lines

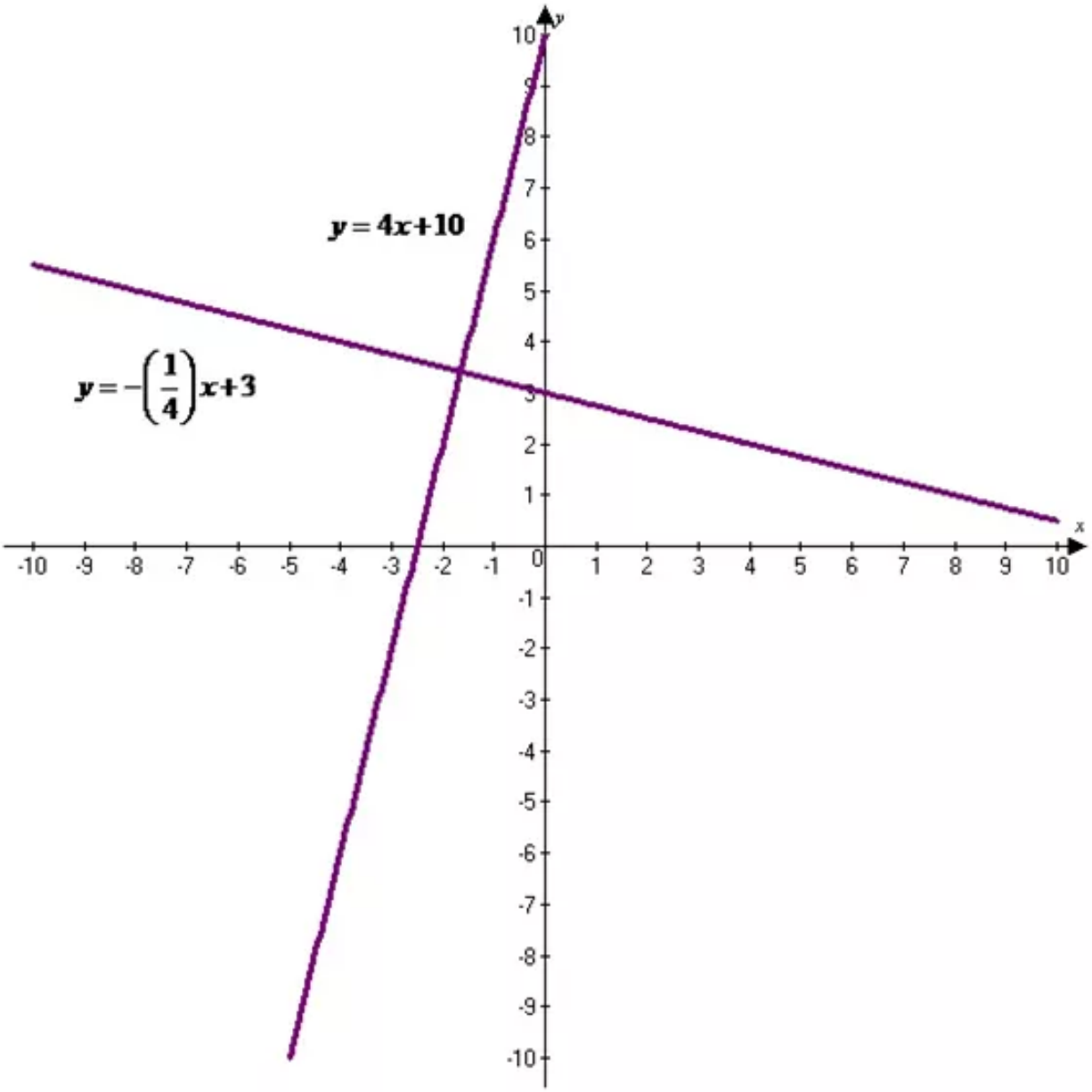
The perpendicular lines that intersect at right angles are called perpendicular lines there are relationship between the slopes of perpendicular lines

And two non vertical lines are perpendicular if their product of their slopes is $-1$

Example of the perpendicular lines

Assume the any two perpendicular lines $y = 4x + 10$ and $y = -\left(\frac{1}{4}\right)x + 3$

Draw the graph to the perpendicular lines




Hence it is perpendicular lines

## Answer 3PQ.

Need to write the slope intercept form for an equation of the line that satisfies the condition

Given that line passes through the points $(-1,-2)$ and $(1,3)$

Find the slope

$$m=\frac{y_2-y_1}{x_2-x_1}$$

$$m=\frac{3-(-2)}{1-(-1)} \qquad (x_1,y_1)=(-1,-2) \text{ and } (x_2,y_2)=(1,3)$$

$$m=\frac{3+2}{1+1}$$

$$m=\frac{5}{2}$$

Now slope $m=\frac{5}{2}$

Slope-intercept form in the form of $y=mx+b$

Formulae of point slope form

$$y-y_1=m(x-x_1)$$

Substitute the point $(x_1,y_1)=(-1,-2)$ and $m=\frac{5}{2}$ in the point slope form

Solve the equation we get

$$y-(-2)=\frac{5}{2}(x-(-1))$$

$$y+2=\frac{5}{2}(x+1) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+2=\frac{5}{2}x+\frac{5}{2}$$

$$y+2-2=\frac{5}{2}x+\frac{5}{2}-2 \qquad \text{Adding } -2 \text{ on both sides}$$

$$y=\frac{5}{2}x+\frac{1}{2}$$

Hence the required solution the slope-intercept form for an equation of the line that satisfies the equation $\boxed{y=\frac{5}{2}x+\frac{1}{2}}$

## Answer 4CU.

Need to find the slope intercept form of an equation for a line that passes through the point $(0,-1)$

Given that the parallel to the graph of each equation is $y=-2x+1$

The line parallel to $y=-2x+4$ has the same slope $-2$ Replace $m$ with $-2$

And the point $(x_1,y_1)$ is $(0,-1)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-1)=-2(x-0) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y+1=-2x$$
$$y+1-1=-2x-1 \qquad \text{Adding } -1 \text{ on both sides}$$
$$y=-2x-1$$

Hence the required solution in the slope intercepts form equation $\boxed{y=-2x-1}$

## Answer 4PQ.

Need to write the slope intercept form for an equation of the line that satisfies the condition

Given that parallel to the graph

$y=2x-2$

Given that line passes through the point

$(-2,3)$

The line parallel to $y=2x-2$ has the same slope $2$ replace $m$ with $2$

Substitute the values $(x_1,y_1)=(-2,3)$ and $m=2$ in the point slope form

Solve the equation we get

$$y-3=2(x-(-2))$$
$$y-3=2(x+2) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-3=2x+4$$
$$y-3+3=2x+4+3 \qquad \text{Adding 3 on both sides}$$
$$y=2x+7$$

Hence the required solution the slope-intercept form for an equation of the line that satisfies the condition $\boxed{y=2x+7}$

## Answer 5CU.

Need to find the slope intercept form of an equation for a line that passes through the point $(2,3)$

Given that the parallel to the graph of each equation is $y=x+5$

The line parallel to $y=x+5$ has the same slope $1$ Replace $m$ with $1$

And the point $(x_1,y_1)$ is $(2,3)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-3=1(x-2) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-3=x-2$$
$$y-3+3=x-2+3 \qquad \text{Adding 3 on both sides}$$
$$y=x+1$$

Hence the required solution in the slope intercepts form equation $\boxed{y=x+1}$

## Answer 5PQ.

Need to write the slope intercept form for an equation of the line that satisfies the equation

Find the standard form equation and slope intercept form

First we find the slope intercept form equation

Formulae of slope intercept form

$$y=mx+b$$

Given that the slope of equation

$$y-4=\frac{1}{2}(x+3)$$

Formulae of point slope form

$$y-y_1=m(x-x_1)$$

Solve the equation we get

$$y-4=\frac{1}{2}(x+3) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-4=\frac{1}{2}x+\frac{3}{2}$$
$$y-4+4=\frac{1}{2}x+\frac{3}{2}+4 \qquad \text{Adding 4 on both sides}$$
$$y=\frac{1}{2}x+\frac{11}{2}$$

Hence the required solution is in the form of slope intercept form $\boxed{y=\frac{1}{2}x+\frac{11}{2}}$

Now we find the standard form equation

Formulae of standard form equation

$$Ax+By=C$$

Given that the slope of equation

$$y-4=\frac{1}{2}(x+3)$$

Formulae of point slope form

$$y-y_1=m(x-x_1)$$

Solve the equation we get

$$y-4=\frac{1}{2}(x+3)$$

$$2(y-2)=2\left(\frac{1}{2}\right)(x+3) \qquad \text{Multiply 2 on both sides}$$

$$2y-4=1(x+3)$$

$$2y-4-2y-3=x+3-2y-3 \qquad \text{Adding } -2y-3 \text{ on both sides}$$

$$x-2y=-11$$

Hence the required solution is in the form of standard form equation $\boxed{x-2y=-11}$

**Answer 6CU.**

Need to find the slope intercept form of an equation for a line that passes through the point $(1,-3)$

Given that the parallel to the graph of each equation is $y=2x-1$

The line parallel to $y=2x-1$ has the same slope $2$ Replace $m$ with $2$

And the point $(x_1,y_1)$ is $(1,-3)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-3)=2(x-1) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+3=2x-2$$

$$y+3-3=2x-2-3 \qquad \text{Adding } -3 \text{ on both sides}$$

$$y=2x-5$$

Hence the required solution in the slope intercepts form equation $\boxed{y=2x-5}$

**Answer 7CU.**

Need to find the slope intercept form of an equation for a line that passes through the point $(-2,2)$

Given that the parallel to the graph of each equation is $-3x+y=4$

Find the slope of given line

$$-3x+y=4$$
$$-3x+y+3x=4+3x \qquad \text{Adding } 3x \text{ on both sides}$$
$$y=3x+4$$

The line parallel to $y=3x+4$ has the same slope $3$ Replace $m$ with $3$

And the point $(x_1,y_1)$ is $(-2,2)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-2=3(x-(-2)) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-2=3x+6$$
$$y-2+2=3x+6+2 \qquad \text{Adding 2 on both sides}$$
$$y=3x+8$$

Hence the required solution in the slope intercepts form equation $\boxed{y=3x+8}$

**Answer 8CU.**

Need to find the Quadrilateral ABCD has vertices $A(-2,1)\ B(3,3)\ C(5,7)\ D(0,5)$ determine whether $\overline{AC}$ is perpendicular to $\overline{BD}$

Given that the $\overline{AC}=(-2,1)(5,7)$

Finding the slope of $\overline{AC}$

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{7-1}{5-(-2)}$$
$$m=\frac{6}{5+2}$$
$$m=\frac{6}{7}$$

Finding the slope $\overline{BD}$

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{5-3}{0-3}$$
$$m=\frac{2}{-3}$$
$$m=\frac{2}{-3}$$

The line segments are perpendicular because

$$=\frac{6}{7}\times\left(\frac{2}{-3}\right)$$
$$=\frac{12}{-21}$$
$$=\frac{4}{-7}$$

Hence the line segment is perpendicular to $\boxed{\frac{4}{-7}}$

## Answer 9CU.

Need to find the slope intercept form of an equation for a line that passes through the point $(-3,1)$

Given that the perpendicular to the graph of each equation is $y=\frac{1}{3}x+2$

The perpendicular line to $y=\frac{1}{3}x+2$

The slope given line is $\frac{1}{3}$ so the slope of the line perpendicular to this line is the opposite reciprocal of $\frac{1}{3}$, or $-3$

And the point $(x_1,y_1)$ is $(-3,1)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-1=-3(x-(-3)) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-1=-3x-9$$
$$y-1+1=-3x-9+1 \qquad \text{Adding 1 on both sides}$$
$$y=-3x-8$$

Hence the required solution in the slope intercepts form equation $\boxed{y=-3x-8}$

## Answer 10CU.

Need to find the slope intercept form of an equation for a line that passes through the point $(6-2)$

Given that the perpendicular to the graph of each equation is $y=\frac{3}{5}x-4$

The perpendicular line to $y=\frac{3}{5}x-4$

The slope given line is $\frac{3}{5}$ so the slope of the line perpendicular to this line is the opposite reciprocal of $\frac{3}{5}, \text{or } -\frac{5}{3}$

And the point $(x_1,y_1)$ is $(6,-2)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$y-(-2)=-\frac{5}{3}(x-6)$ By distributive property $a(b+c)=ab+ac$

$y+2=-\frac{5}{3}x+\frac{30}{3}$

$y+2-2=-\frac{5}{3}x+10-2$ Adding $-2$ on both sides

$y=-\frac{5}{3}x-8$

Hence the required solution in the slope intercepts form equation $\boxed{y=-\frac{5}{3}x-8}$

## Answer 11CU.

Need to find the slope intercept form of an equation for a line that passes through the point $(2-2)$

Given that the perpendicular to the graph of each equation $2x+y=5$

Find the slope of given line

$2x+y=5$

$2x+y-2x=-2x+5$ Adding $-2x$ on both sides

$y=-2x+5$

The slope of perpendicular line $y=-2x+5$

The slope given line is $-2$ so the slope of the line perpendicular to this line is the opposite reciprocal of $-2, \text{or } \frac{1}{2}$

And the point $(x_1,y_1)$ is $(2,-2)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$y-(-2)=\frac{1}{2}(x-2)$ By distributive property $a(b+c)=ab+ac$

$y+2=\frac{1}{2}x-\frac{2}{2}$

$y+2=\frac{1}{2}x-1$

$y+2-2=\frac{1}{2}x-1-2$ Adding $-2$ on both sides

$y=\frac{1}{2}x-3$

Hence the required solution in the slope intercepts form equation $\boxed{y=\frac{1}{2}x-3}$

**Answer 13PA.**

Need to find the slope intercept form of an equation of the line passes through the point and parallel to the graph

Slope intercept form of an equation of the equation of line passes through the point $(2,7)$

Given that the parallel to the graph of equation $y=x-2$

The line parallel $y=x-2$ has the same slope $1$ replace $m$ with $1$ and $(x_1,y_1)$ with $(2,-7)$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$\begin{aligned} y-(-7)&=1(x-2)\\ y+7&=1(x-2) && \text{By distributive property } a(b+c)=ab+ac\\ y+7&=x-2\\ y+7-7&=x-2-7 && \text{Adding } -7 \text{ on both sides}\\ y&=x-9 \end{aligned}$$

Hence the required solution slope intercept equation of a line passes through the point and parallel graph $\boxed{y=x-9}$

**Answer 14PA.**

Need to find the slope intercept form of an equation of the line passes through the point and parallel to the graph

Slope intercept form of an equation of the equation of line passes through the point $(2,-1)$

Given that the parallel to the graph of equation $y=2x+2$

The line parallel $y=2x+2$ has the same slope $2$ replace $m$ with $2$ and $(x_1,y_1)$ with $(2,-1)$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$\begin{aligned} y-(-1)&=2(x-2)\\ y+1&=2(x-2) && \text{By distributive property } a(b+c)=ab+ac\\ y+1&=2x-4\\ y+1-1&=2x-4-1 && \text{Adding } -1 \text{ on both sides}\\ y&=2x-5 \end{aligned}$$

Hence the required solution slope intercept equation of a line passes through the point and parallel graph $\boxed{y=2x-5}$

## Answer 15PA.

Need to find the slope intercept form of an equation of the line passes through the point and parallel to the graph

Slope intercept form of an equation of the equation of line passes through the point $(-3,2)$

Given that the parallel to the graph of equation $y=x-6$

The line parallel $y=x-6$ has the same slope $1$ replace $m$ with $1$ and $(x_1,y_1)$ with $(-3,2)$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$\begin{aligned}
y-2&=1(x-(-3))\\
y-2&=1(x+3) && \text{By distributive property } a(b+c)=ab+ac\\
y-2&=x+3\\
y-2+2&=x+3+2 && \text{Adding 2 on both sides}\\
y&=x+5
\end{aligned}$$

Hence the required solution slope intercept equation of a line passes through the point and parallel graph $\boxed{y=x+5}$

## Answer 16PA.

Need to find the slope intercept form of an equation of the line passes through the point and parallel to the graph

Slope intercept form of an equation of the equation of line passes through the point $(4,-1)$

Given that the parallel to the graph of equation $y=2x+1$

The line parallel $y=2x+1$ has the same slope $2$ replace $m$ with $2$ and $(x_1,y_1)$ with $(4,-1)$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$\begin{aligned}
y-(-1)&=2(x-4)\\
y+1&=2(x-4) && \text{By distributive property } a(b+c)=ab+ac\\
y+1&=2x-8\\
y+1-1&=2x-8-1 && \text{Adding } -1 \text{ on both sides}\\
y&=2x-9
\end{aligned}$$

Hence the required solution slope intercept equation of a line passes through the point and parallel graph $\boxed{y=2x-9}$

**Answer 17PA.**

Need to find the slope intercept form of an equation of the line passes through the point and parallel to the graph

Slope intercept form of an equation of the equation of line passes through the point $(-5,-4)$

Given that the parallel to the graph of equation $y=\frac{1}{2}x+1$

The line parallel $y=\frac{1}{2}x+1$ has the same slope $\frac{1}{2}$ replace $m$ with $\frac{1}{2}$ and $(x_1,y_1)$ with $(-5,-4)$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-4)=\frac{1}{2}(x-(-5))$$

$$y+4=\frac{1}{2}(x+5) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+4=\frac{1}{2}x+\frac{5}{2}$$

$$y+4-4=\frac{1}{2}x+\frac{5}{2}-4 \qquad \text{Adding } -4 \text{ on both sides}$$

$$y=\frac{1}{2}x-\frac{3}{2}$$

Hence the required solution slope intercept equation of a line passes through the point and parallel graph $\boxed{y=\frac{1}{2}x-\frac{3}{2}}$

## Answer 18PA.

Need to find the slope intercept form of an equation of the line passes through the point and parallel to the graph

Slope intercept form of an equation of the equation of line passes through the point $(3,3)$

Given that the parallel to the graph of equation $y=\frac{2}{3}x-1$

The line parallel $y=\frac{2}{3}x-1$ has the same slope $\frac{2}{3}$ replace $m$ with $\frac{2}{3}$ and $(x_1,y_1)$ with $(3,3)$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-3=\frac{2}{3}(x-3)$$

$$y-3=\frac{2}{3}(x-3)$$ By distributive property $a(b+c)=ab+ac$

$$y-3=\frac{2}{3}x-\frac{6}{3}$$

$$y-3=\frac{2}{3}x-2$$

By simplification we get

$$y-3+3=\frac{2}{3}x-2+3$$ Adding 3 on both sides

$$y=\frac{2}{3}x+1$$

Hence the required solution slope intercept equation of a line passes through the point and parallel graph $\boxed{y=\frac{2}{3}x+1}$

## Answer 19PA.

Need to find the slope intercept form of an equation of the line passes through the given point and is parallel to the graph of equation

Given that the slope intercept form of an equation passes through the point $(-4,-3)$

Given that the parallel to the graph of equation $y=-\frac{1}{3}x+3$

The line parallel to $y=-\frac{1}{3}x+3$ has the same slope $-\frac{1}{3}$ replace $m$ with $-\frac{1}{3}$ and $(x_1,y_1)$ $(-4,-3)$ in the point slope form

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-3)=-\frac{1}{3}(x-(-4))$$

$$y+3=-\frac{1}{3}(x+4) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+3=-\frac{1}{3}x-\frac{4}{3}$$

$$y+3-3=-\frac{1}{3}x-\frac{4}{3}-3 \qquad \text{Adding } -3 \text{ on both sides}$$

$$y=-\frac{1}{3}x-\frac{13}{3}$$

Hence the required solution slope intercept form of line passes through the given point of parallel graph $\boxed{y=-\frac{1}{3}x-\frac{13}{3}}$

## Answer 20PA.

Need to find the slope intercept form of an equation of the line passes through the given point and is parallel to the graph of equation

Given that the slope intercept form of an equation passes through the point $(-1,2)$

Given that the parallel to the graph of equation $y=-\frac{1}{2}x-4$

The line parallel to $y=-\frac{1}{2}x-4$ has the same slope $-\frac{1}{2}$ replace $m$ with $-\frac{1}{2}$ and $(x_1,y_1)$ $(-1,2)$ in the point slope form

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-2=-\frac{1}{2}(x-(-1))$$

$$y-2=-\frac{1}{2}(x+1) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-2=-\frac{1}{2}x-\frac{1}{2}$$

$$y-2+2=-\frac{1}{2}x-\frac{1}{2}+2 \qquad \text{Adding 2 on both sides}$$

$$y=-\frac{1}{2}x-\frac{3}{2}$$

Hence the required solution slope intercept form of line passes through the given point of parallel graph $\boxed{y=-\frac{1}{2}x-\frac{3}{2}}$

## Answer 21PA.

Need to find the slope intercept form of an equation of the line passes through the given point and is parallel to the graph of equation

Given that the slope intercept form of an equation passes through the point $(-3,0)$

Given that the parallel to the graph of equation $2y=x-1$

The line parallel to $2y=x-1$ has the same slope $\frac{1}{2}$ replace $m$ with $\frac{1}{2}$ and $(x_1,y_1)$ $(-3,0)$ in the point slope form

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-0=\frac{1}{2}(x-(-3))$$

$$y-0=\frac{1}{2}(x+3) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y=\frac{1}{2}x+\frac{3}{2}$$

Hence the required solution slope intercept form of line passes through the given point of parallel graph $\boxed{y=\frac{1}{2}x+\frac{3}{2}}$

## Answer 22PA.

Need to find the slope intercept form of an equation of the line passes through the given point and is parallel to the graph of equation

Given that the slope intercept form of an equation passes through the point $(2,2)$

Given that the parallel to the graph of equation $3y=-2x+6$

The line parallel to $3y=-2x+6$ has the same slope $-\frac{2}{3}$ replace $m$ with $-\frac{2}{3}$ and $(x_1,y_1)$ $(2,2)$ in the point slope form

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-2=-\frac{2}{3}(x-2)$$

$$y-2=-\frac{2}{3}(x-2)$$ By distributive property $a(b+c)=ab+ac$

$$y-2=-\frac{2}{3}x+\frac{4}{3}$$

$$y-2+2=-\frac{2}{3}x+\frac{4}{3}+2$$ Adding 2 on both sides

$$y=-\frac{2}{3}x+\frac{10}{3}$$

Hence the required solution slope intercept form of line passes through the given point of parallel graph $\boxed{y=-\frac{2}{3}x+\frac{10}{3}}$

**Answer 23PA.**

Need to find the slope intercept form of an equation of the line passes through the given point and is parallel to the graph of equation

Given that the slope intercept form of an equation passes through the point $(-2,3)$

Given that the parallel to the graph of equation $6x+y=4$

Find the slope of given line

$$6x+y=4$$
$$6x-6x+y=4-6x \qquad \text{Adding } -6x \text{ on both sides}$$
$$y=-6x+4$$

The line parallel to $y=-6x+4$ has the same slope $-6$ replace $m$ with $-6$ and $(x_1,y_1)$ $(-2,3)$ in the point slope form

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-3=-6(x-(-2))$$
$$y-3=-6(x+2) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-3=-6x-12$$
$$y-3+3=-6x-12+3 \qquad \text{Adding 3 on both sides}$$
$$y=-6x-9$$

Hence the required solution slope intercept form of line passes through the given point of parallel graph $\boxed{y=-6x-9}$

## Answer 24PA.

Need to the slope intercept form of an equation of that line passes through the given point and is parallel to the graph of equation

Given that the slope intercept form of an equation that line passes through the given point $(2,2)$

Given that the parallel to the graph of equation $3x-4y=-4$

Find the given slope of given line

$$3x-4y=-4$$

$$3x-3x-4y=-4-3x \qquad \text{Adding } -3x \text{ on both sides}$$

$$-4y=-4-3x$$

$$\frac{-4}{-4}y=\frac{-4}{-4}+\frac{3}{4}x \qquad \text{Divided by } -4 \text{ on both sides}$$

$$y=\frac{3}{4}x+1$$

Formulae of point slope form $y-y_1=m(x-x_1)$

The line parallel to $y=\frac{3}{4}x+1$ has the slope $\frac{3}{4}$ replace $m$ with $\frac{3}{4}$ and $(x_1,y_1)=(2,2)$ within the point slope form

Solve the equation we get

$$y-2=\frac{3}{4}(x-2) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-2=\frac{3}{4}x-\frac{6}{4}$$

$$y-2+2=\frac{3}{4}x-\frac{6}{4}+2 \qquad \text{Adding 2 on both sides}$$

$$y=\frac{3}{4}x+\frac{2}{4}$$

Hence the required solution the slope intercept form of an equation of the line passes through the parallel graph of equation $\boxed{y=\frac{3}{4}x+\frac{2}{4}}$

## Answer 25PA.

Need to find the parallelogram is a quadrilateral in which sides are parallel is $ABCD$ a parallelogram

Given that in the graph $x=3$ and $x=-1$

Given that the slope of equation $y=\frac{2}{3}x+2$

And another slope of the equation $y=\frac{2}{3}x-2$

So the lines for $x=3$ and $x=-1$ are parallel because all vertical lines are parallel

Because they have the same slope thus the both pairs of opposite sides are parallel

Hence then figure is parallelogram

## Answer 26PA.

Need to find the equation of the line parallel to the graph of $y=5x-3$ and through the origin

Consider the equation of the parallel line $y=5x-3$

Use the equation $y=5x-3$ has the same slope $m$ and the slope $m=5$

Point slope form formula $y-y_1=m(x-x_1)$

And the line passes through the origin $(0,0)$

Substitute the values $m=5$ and the point $(0,0)$ then solve the equation

$y-y_1=m(x-x_1)$ Replace $(x_1,y_1)=(0,0)$

$y-0=5(x-0)$ By distributive property $a(b+c)=ab+ac$

$y=5x$

Hence the required solution of the line passes through the origin is $\boxed{y=5x}$

**Answer 27PA.**

Need to write an equation of the line with $y$ intercept $-6$ that is parallel to the graph

Given that the parallel to the graph of equation $x-3y=8$

Solve the slope of equation

$$x-3y=8$$

$$x-3y-x=8-x \qquad \text{Adding } -x \text{ on both sides}$$

$$-3y=-x+8$$

$$\frac{-3y}{-3}=-\left(-\frac{1}{3}\right)x-\frac{8}{3} \qquad \text{Divded } -3 \text{ on both sides}$$

$$y=\frac{1}{3}x-\frac{8}{3}$$

The line parallel to $x-3y=8$ has the same slope, $\frac{1}{3}$ replace $m$ with $\frac{1}{3}$ and $(x_1,y_1)$ is $(0,6)$ in the point slope form

Point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-6)=\frac{1}{3}(x-0) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+6=\frac{1}{3}x-0$$

$$y+6-6=\frac{1}{3}x-6 \qquad \text{Adding } -6 \text{ on both sides}$$

$$y=\frac{1}{3}x-6$$

Hence the required solution of an equation of the line with $y$ intercept that is parallel to the graph $\boxed{y=\frac{1}{3}x-6}$

## Answer 28PA.

Need to find the slope intercept form of an equation that passes through the given point is perpendicular to the graph of equation

Given that the slope intercepts form of an equation that passes through the given point $(-2,0)$

And slope of the given line $y=x-6$

So the slope of perpendicular to this is the opposite reciprocal of $1$ or $-1$

Now slope $m=-1$

Point slope form $y-y_1=m(x-x_1)$

Solve the we get

$$y-0=-1(x-(-2))$$
$$y=-1(x+2) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y=-x-2$$

Hence the required solution slope intercept form of an equation passes through point is perpendicular to the graph $\boxed{y=-x-2}$.

## Answer 29PA.

Need to find the slope intercept form of an equation that passes through the given point is perpendicular to the graph of equation

Given that the slope intercepts form of an equation that passes through the given point $(1,1)$

And slope of the given line $y=4x+6$

So the slope of perpendicular to this is the opposite reciprocal of $4$ or $-\frac{1}{4}$

Now slope $m=-\frac{1}{4}$

Point slope form $y-y_1=m(x-x_1)$

Solve the we get

$$y-1=-\frac{1}{4}(x-1)$$
$$y-1=-\frac{1}{4}x+\frac{1}{4} \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-1+1=-\frac{1}{4}x+\frac{1}{4}+1 \qquad \text{Adding 1 on both sides}$$
$$y=-\frac{1}{4}x+\frac{5}{4}$$

Hence the required solution slope intercept form of an equation passes through point is perpendicular to the graph $\boxed{y=-\frac{1}{4}x+\frac{5}{4}}$

## Answer 30PA.

Need to find the slope intercept form of an equation that passes through the given point is perpendicular to the graph of equation

Given that the slope intercepts form of an equation that passes through the given point $(-3,1)$

And slope of the given line $y=-3x+7$

So the slope of perpendicular to this is the opposite reciprocal of $-3$ or $\frac{1}{3}$

Now slope $m=\frac{1}{3}$

Point slope form $y-y_1=m(x-x_1)$

Solve the we get

$$y-1=\frac{1}{3}(x-(-3))$$

$$y-1=\frac{1}{3}(x+3) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-1+1=\frac{1}{3}x+1+1 \qquad \text{Adding 1 on both sides}$$

$$y=\frac{1}{3}x+2$$

Hence the required solution slope intercept form of an equation passes through point is perpendicular to the graph $\boxed{y=\frac{1}{3}x+2}$

## Answer 31PA.

Need to find the slope intercept form of an equation that passes through the given point is perpendicular to the graph of equation

Given that the slope intercepts form of an equation that passes through the given point $(0,5)$

And slope of the given line $y=-8x+4$

So the slope of perpendicular to this is the opposite reciprocal of $-8$ or $\frac{1}{8}$

Point slope form $y-y_1=m(x-x_1)$

Solve the we get

$$y-5=\frac{1}{8}(x-0)$$

$$y-5=\frac{1}{8}x-0 \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-5+5=\frac{1}{8}x+5 \qquad \text{Adding 5 on both sides}$$

$$y=\frac{1}{8}x+5$$

Hence the required solution slope intercept form of an equation passes through point is perpendicular to the graph $\boxed{y=\frac{1}{8}x+5}$

**Answer 32PA.**

Need to find the slope intercept form of an equation that passes through the given point is perpendicular to the graph of equation

Given that the slope intercepts form of an equation that passes through the given point $(1,-3)$

And slope of the given line $y=\frac{1}{2}x+4$

So the slope of perpendicular to this is the opposite reciprocal of $\frac{1}{2}$ or $-2$

Now the slope $m=-2$

Point slope form $y-y_1=m(x-x_1)$

Solve the we get

$$y-(-3)=-2(x-1)$$
$$y+3=2x+2 \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y+3-3=2x+2-3 \qquad \text{Adding } -3 \text{ on both sides}$$
$$y=2x-1$$

Hence the required solution slope intercept form of an equation passes through point is perpendicular to the graph $\boxed{y=2x-1}$

**Answer 33PA.**

Need to find the slope intercept form of an equation that passes through the given point is perpendicular to the graph of equation

Given that the slope intercepts form of an equation that passes through the given point $(4,7)$

And slope of the given line $y=\frac{2}{3}x-1$

So the slope of perpendicular to this is the opposite reciprocal of $\frac{2}{3}$ or $-\frac{3}{2}$

Now the slope $m=-\frac{3}{2}$

Point slope form $y-y_1=m(x-x_1)$

Solve the we get

$$y-7=-\frac{3}{2}(x-4)$$
$$y-7=-\frac{3}{2}x+\frac{12}{2} \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-7+7=-\frac{3}{2}x+6+7 \qquad \text{Adding 7 on both sides}$$
$$y=-\frac{3}{2}x+13$$

Hence the required solution slope intercept form of an equation passes through point is perpendicular to the graph $\boxed{y=-\frac{3}{2}x+13}$

**Answer 34PA.**

Need to find the slope intercept form of an equation that passes through the given point and is perpendicular to the graph

Given that the slope intercept form of an equation passes through the given point $(0,4)$

Given that equation of line $3x+8y=4$

Find the slope of given line

$$3x+8y=4$$

$$3x+8y-3x=-3x+4 \qquad \text{Adding } -3x \text{ on both sides}$$

$$8y=-3x+4$$

$$\frac{8}{8}y=-\frac{3}{8}x+\frac{4}{8} \qquad \text{Divided 8 on both sides}$$

$$y=-\frac{3}{8}x+\frac{1}{2}$$

The slope of the given line is $y=-\frac{3}{8}x+\frac{1}{2}$ has the same slope replace $m$ slope of the line

perpendicular to this line opposite reciprocal of $-\frac{3}{8}$ or $\frac{8}{3}$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-4=\frac{8}{3}(x-0) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-4=\frac{8}{3}x-0$$

$$y-4=\frac{8}{3}x$$

$$y-4+4=\frac{8}{3}x+4 \qquad \text{Adding 4 on both sides}$$

$$y=\frac{8}{3}x+4$$

Hence the required solution slope intercept form of an equation of line passes through the given point and is perpendicular to the graph of equation $\boxed{y=\frac{8}{3}x+4}$

## Answer 35PA.

Need to find the slope intercept form of an equation that passes through the given point and is perpendicular to the graph

Given that the slope intercept form of an equation passes through the given point $(-2,7)$

Given that equation of line $2x-7=3y$

Find the slope of given line

$$2x-5y=3$$

$$2x-5y-2x=3-2x \qquad \text{Adding } -2x \text{ on both sides}$$

$$-5y=-2x+3$$

$$\frac{-5}{-5}y=\frac{-2}{-5}x+\frac{3}{-5} \qquad \text{Divided } -5 \text{ on both sides}$$

$$y=\frac{2}{5}x-\frac{3}{5}$$

The slope of the given line is $y=\frac{2}{5}x-\frac{3}{5}$ has the same slope replace $m$ slope of the line

perpendicular to this line opposite reciprocal of $\frac{2}{5}$ or $-\frac{5}{2}$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-7=-\frac{5}{2}(x-(-2))$$

$$y-7=-\frac{5}{2}(x+2) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-7=-\frac{5}{2}x-\frac{10}{2}$$

By simplification we get

$$y-7+7=-\frac{5}{2}x-5+7 \qquad \text{Adding 7 on both sides}$$

$$y=-\frac{5}{2}x+2$$

Hence the required solution slope intercept form of an equation of line passes through the given point and is perpendicular to the graph of equation $\boxed{y=-\frac{5}{2}x+2}$

**Answer 36PA.**

Need to find the slope intercept form of an equation that passes through the given point and is perpendicular to the graph

Given that the slope intercept form of an equation passes through the given point $(6,-1)$

Given that equation of line $3y+x=3$

Find the slope of given line

$$3y+x=3$$

$$3y+x-x=3-x \qquad \text{Adding } -x \text{ on both sides}$$

$$3y=-x+3$$

$$\frac{3}{3}y=\frac{-1}{3}x+\frac{3}{3} \qquad \text{Divided 3 on both sides}$$

$$y=-\frac{1}{3}x+1$$

The slope of the given line is $y=-\frac{1}{3}x+1$ has the same slope replace $m$ slope of the line

perpendicular to this line opposite reciprocal of $-\frac{1}{3}$ or 3

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-1)=3(x-6)$$

$$y+1=3(x-6) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+1=3x-6$$

$$y+1-1=3x-6-1 \qquad \text{Adding -1 on both sides}$$

$$y=3x-7$$

Hence the required solution slope intercept form of an equation of line passes through the given point and is perpendicular to the graph of equation $\boxed{y=3x-7}$

**Answer 37PA.**

Need to find the slope intercept form of an equation that passes through the given point and is perpendicular to the graph

Given that the slope intercept form of an equation passes through the given point $(0,-1)$

Given that equation of line $5x-y=3$

Find the slope of given line

$$5x-y=3$$

$$5x-y-5x=3-5x \qquad \text{Adding } -5x \text{ on both sides}$$

$$-y=-5x+3$$

$$y=5x-3 \qquad \text{Multiply -1 on both sides}$$

The slope of the given line is $y=5x-3$ has the same slope replace $m$ slope of the line perpendicular to this line opposite reciprocal of $5$ or $-\frac{1}{5}$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-1)=-\frac{1}{5}(x-0)$$

$$y+1=-\frac{1}{5}x-0 \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+1=-\frac{1}{5}x$$

$$y+1-1=-\frac{1}{5}x-1 \qquad \text{Adding } -1 \text{ on both sides}$$

$$y=-\frac{1}{5}x-1$$

Hence the required solution slope intercept form of an equation of line passes through the given point and is perpendicular to the graph of equation $\boxed{y=-\frac{1}{5}x-1}$

**Answer 38PA.**

Need to find the slope intercept form of an equation that line passes through the given point and is perpendicular to the graph

Given that the slope intercept form of an equation that line passes through the point $(8,-2)$

Given that the slope of line $3y=5x-7$

Find the slope of the line

$$3y=5x-7$$

$$\frac{3y}{3}=\frac{5}{3}x-\frac{7}{3}$$ Divided by 3 on both sides

$$y=\frac{5}{3}x-\frac{7}{3}$$

The slope of line $y=\frac{5}{3}x-\frac{7}{3}$ has the same slope $\frac{5}{3}$ replace $m$ the perpendicular to opposite reciprocal of $\frac{5}{3}$ or $-\frac{3}{5}$

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-2)=-\frac{3}{5}(x-8)$$ By distributive property $a(b+c)=ab+ac$

$$y+2=-\frac{3}{5}x+\frac{24}{5}$$

$$y+2-2=-\frac{3}{5}x+\frac{24}{5}-2$$ Adding $-2$ on both sides

$$y=-\frac{3}{5}x+\frac{14}{5}$$

Hence the required solution of slope intercept form of an equation is passes through the perpendicular to the graph $\boxed{y=-\frac{3}{5}x+\frac{14}{5}}$.

**Answer 39PA.**

Need to find the slope intercept form of an equation line passes through given point and the perpendicular to the graph

Given that the slope intercept form of an equation line passes through the point $(3,-3)$

Given that the slope of the line $3x+7=2x$

We can't find the slope of the line of an equation passes through perpendicular line because they given that the $x$ intercept only

Consider the slope of the line $m=0$

Substitute the point in the point slope form equation

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$y-(-3)=0(x-9)$ By distributive property $a(b+c)=ab+ac$

$y+3=0$

$y=-3$

Hence the required solution of slope intercept form of equation of that passes through point of the perpendicular graph of equation $\boxed{y=-3}$

**Answer 40PA.**

Need to find the equation of the line that has a $y$ intercept is perpendicular to the graph

Given that the $y$ intercept of $-2$

Given that the perpendicular to the graph $3x+6y=2$

Solve the slope of the line we get

$$3x+6y=2$$

$$3x+6y-3x=2-3x \qquad \text{Adding } -3 \text{ on both sides}$$

$$6y=-3x+2$$

$$\frac{6y}{6}=-\frac{3}{6}x+\frac{2}{6} \qquad \text{Divided by 6 on both sides}$$

$$y=-\frac{1}{2}x+\frac{1}{3}$$

The slope of the line $y=-\frac{1}{2}x+\frac{1}{3}$ is same slope $-\frac{1}{2}$ replace $m$ with perpendicular to the opposite reciprocal is $2$

Use the point slope form to find the equation

Formulae of point slope form $y-y_1=m(x-x_1)$

Solve the equation we get

$$y-(-2)=2(x-0) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y+2=2x$$

$$y=2x-2$$

Hence the required solution of an equation of the line of perpendicular to the graph

$\boxed{y=2x-2}$

## Answer 41PA.

We need to find the equation of the line that is perpendicular to the graph

Given that the perpendicular line passes through the point $(9,10)$ and $(3,-2)$

Formulae for slope of the points $\frac{y_2-y_1}{x_2-x_1}$

Formulae of Point slope form $y-y_1=m(x-x_1)$

Find the slope line passes through the point

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{-2-10}{3-9}$$
$$m=\frac{-12}{-6}$$
$$m=2$$

Given that the slope $m=2$

Two vertical lines are perpendicular if the product of their slopes is $-1$ that is the slopes are opposite reciprocals of each other

So the slope of the perpendicular is $m=-\frac{1}{2}$

Solve the equation we get

$$y-3=-\frac{1}{2}(x-(-2))$$
$$y-3=-\frac{1}{2}(x+2) \qquad \text{By distributive property } a(b+c)=ab+ac$$
$$y-3+3=-\frac{1}{2}x-1+3 \qquad \text{Adding 3 on both sides}$$
$$y=-\frac{1}{2}x+2$$

Hence the required solution of the line that is perpendicular $x$ intercept of that line

$$\boxed{y=-\frac{1}{2}x+2}$$

## Answer 42PA.

Need to find the whether the graph of pair of equation are parallel are perpendicular

Given that the slope of equation $y=-2x+11$

Given that the another slope of equation $y+2x=23$

Solve the another slope of equation we get

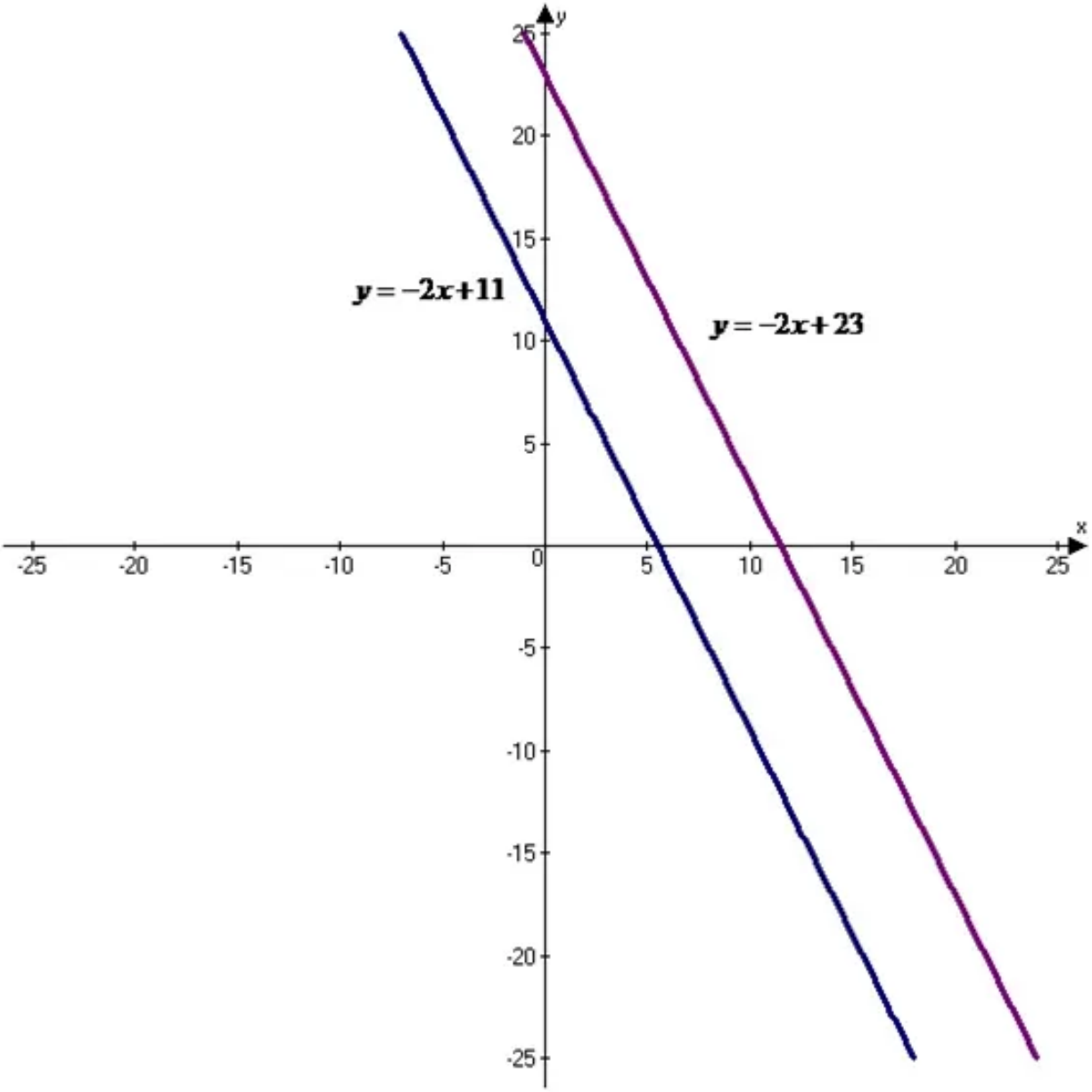
$$y+2x=23$$
$$y+2x-2x=-2x+23 \qquad \text{Adding } -2x \text{ on both sides}$$
$$y=-2x+23$$

Here the two lines are parallel because the two lines have the same slope $-2$.

Two lines are said to be parallel if they have the same slope. And all vertical lines are parallel

So from this it is proved that the given two lines are parallel because they have the same slope with $m=-2$

The graph of two parallel lines are shown below



## Answer 43PA.

Need to find the whether the graph of pair of equation is parallel are perpendicular

Given that the graph pair of equation $3y = 2x + 14$

Solve the graph of equation we get

$$3y = 2x + 14$$

$$\frac{3y}{3} = \left(\frac{2}{3}\right)x + \frac{14}{3} \qquad \text{Divided 3 on both sides}$$

$$y = \left(\frac{2}{3}\right)x + \frac{14}{3}$$

Hence the graph of equation $y = \left(\frac{2}{3}\right)x + \frac{14}{3}$

Given that the graph pair of equation we get $2x - 3y = 2$

Solve the another graph of equation we get

$$2x - 3y = 2$$

$$2x - 2x - 3y = 2 - 2x \qquad \text{Adding } -2x \text{ on both sides}$$

$$-3y = -2x + 2$$

$$\frac{-3y}{-3} = \frac{-2}{-3}x + \frac{2}{-3} \qquad \text{Divided } -3 \text{ on both sides}$$

$$y = \frac{2}{3}x - \frac{2}{3}$$

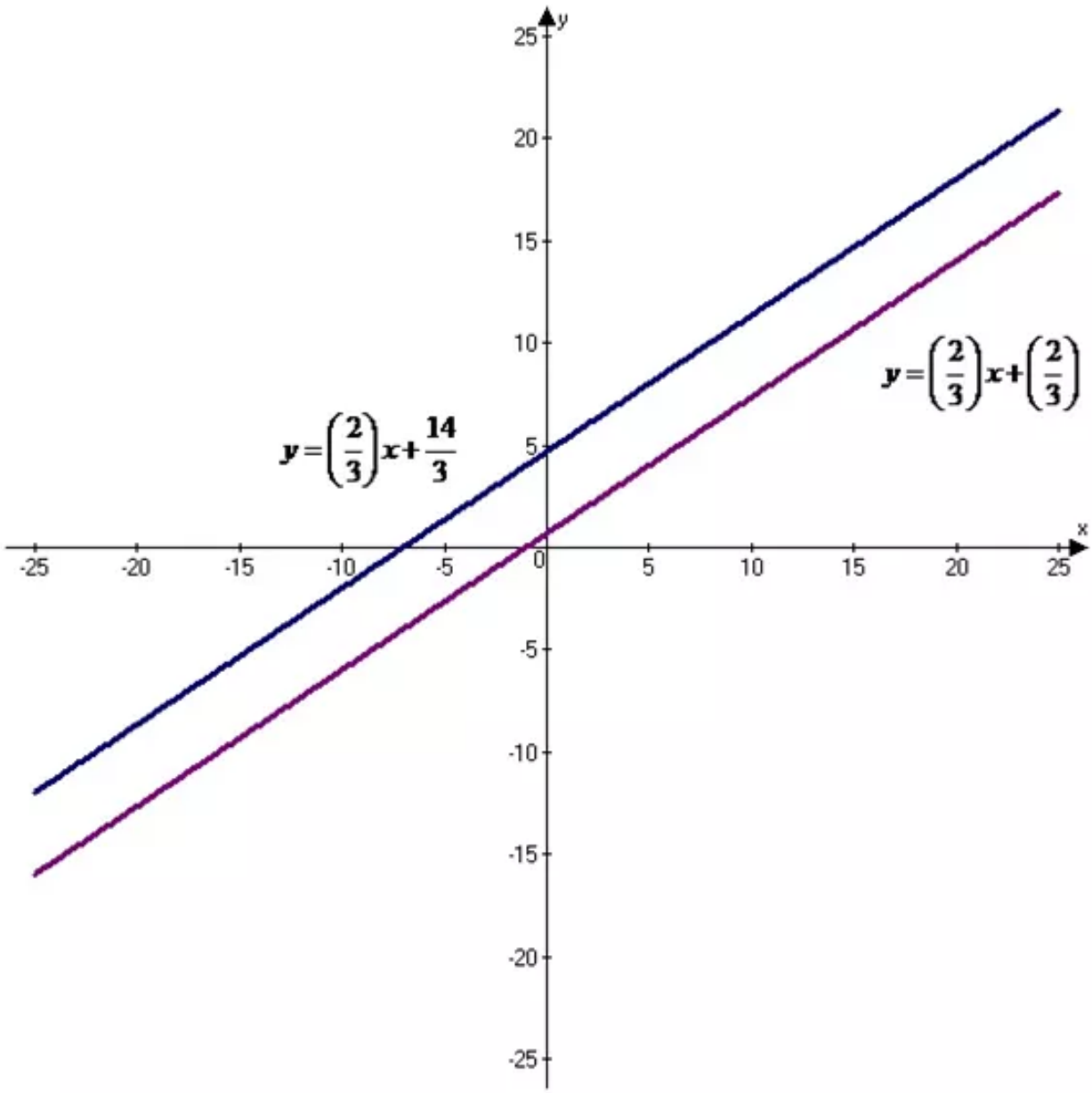
Hence another graph of equation $y = \left(\frac{2}{3}\right)x + \left(\frac{2}{3}\right)$

Here the two lines are parallel because the two lines have the same slope $\frac{2}{3}$.

Two lines are said to be parallel if they have the same slope. And all vertical lines are parallel

So from this it is proved that the given two lines are parallel because they have the same slope with $m = \frac{2}{3}$

The graph of two parallel lines is shown below




Hence the required solution the graphs pairs of equation is parallel.

## Answer 44PA.

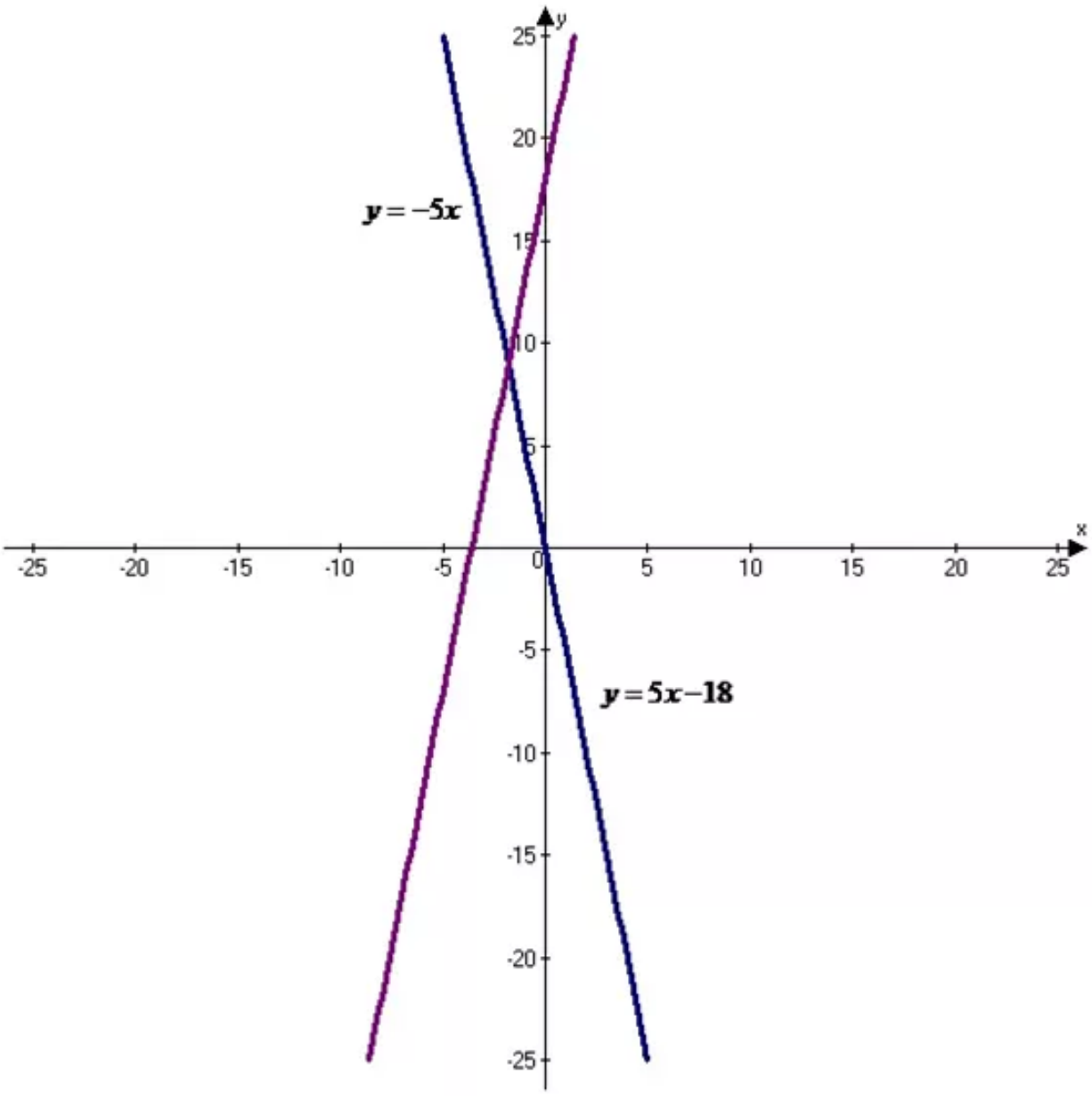
Need to find the whether the graphs of pair of equations are parallel are perpendicular

Given that the graph of equation $y=-5x$

Given that another graph of equation $y=5x-18$

Here two vertical lines are perpendicular if the product of their slopes is $-1$. That is the slopes are opposite reciprocals of each other. Vertical lines and horizontal lines are perpendicular

The graph of two equations are shown below

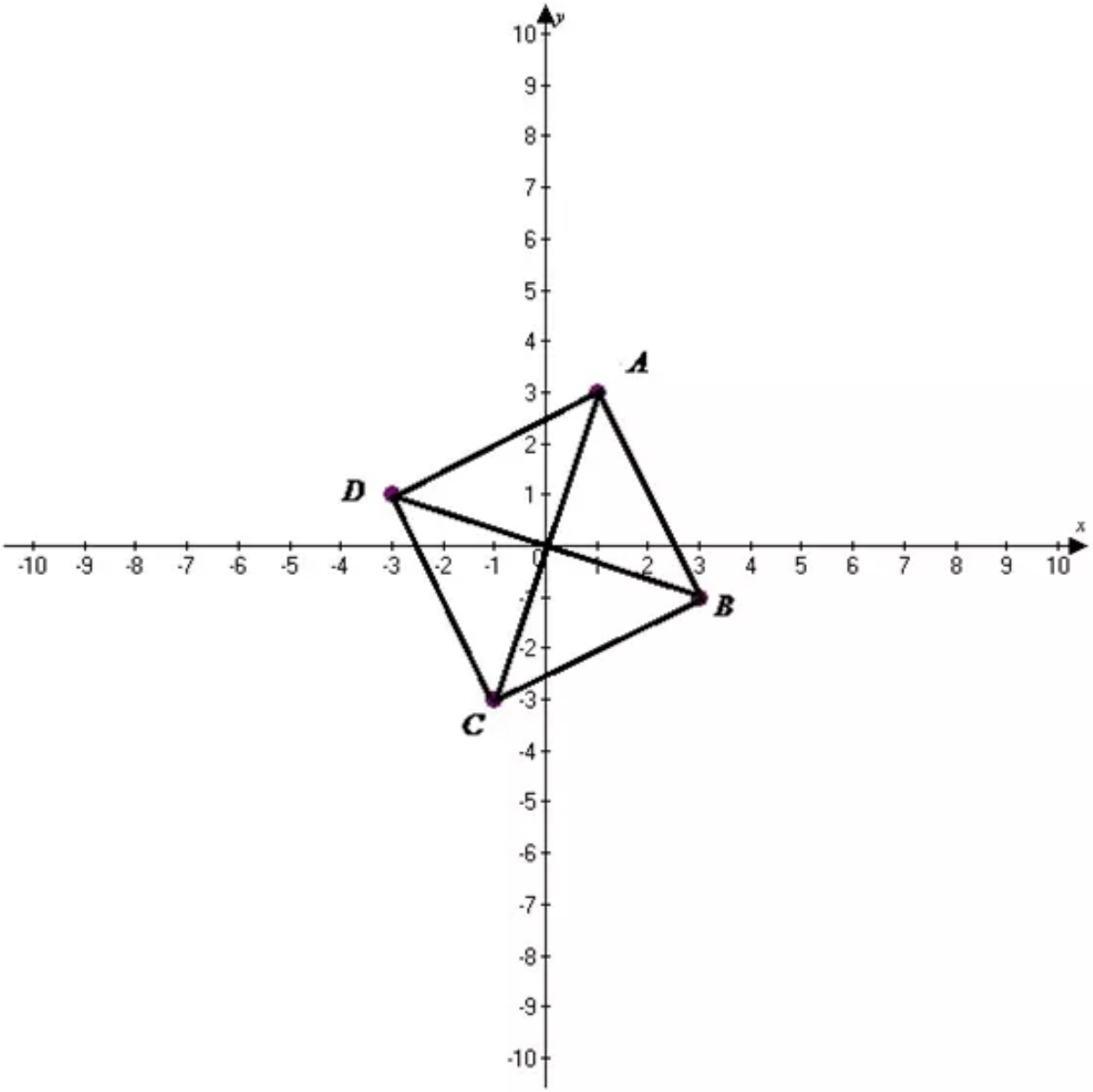



Hence the graph of pair equation is perpendicular

**Answer 45PA.**

Need to find the diagonals of the segments the connect opposite vertices

And determine the relationship between the diagonals $\overline{AC}$ and $\overline{BD}$




In the diagonals that they are opposite sides vertices

The diagonals of the relationship between the $\overline{AC}$ *and* $\overline{BD}$

Assume the points $A(1,3), B(3,-1), C(-1,-3), D(-3,1)$

Formulae of slope $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

Find the slope $\overline{AC}$

$$m=\frac{-3-3}{-1-1}$$

$$m=\frac{-6}{2}$$

$$m=3$$

Hence the slope $m=3$

And the slope of $\overline{BD}$

$$m=\frac{1+1}{-3-3}$$

$$m=\frac{2}{-6}$$

$$m=-\frac{1}{3}$$

Hence the slope $m=-\frac{1}{3}$

Hence they are perpendicular because the slopes are $3$ or $-\frac{1}{3}$

Hence the required solution of $\overline{AC}$ and $\overline{BD}$ are the opposites vertices

**Answer 46PA.**

Need to find the what is $a$ if the lines with the equation $y=ax+5$ and $2y=(a+4)x-1$ are parallel

Consider the equation $y=ax+5$ and $2y=(a+4)x-1$

If two lines are parallel they have the same slope

The equation of $y=ax+5$ and the slope is $a$

Let us take the second equation

$$2y=(a+4)x-1$$

$$\frac{2y}{2}=\frac{(a+4)}{2}x-1 \qquad \text{Dividing both sides by 2}$$

$$y=\frac{(a+4)}{2}x-1$$

Let slope of the second equation is $\frac{a+4}{2}$

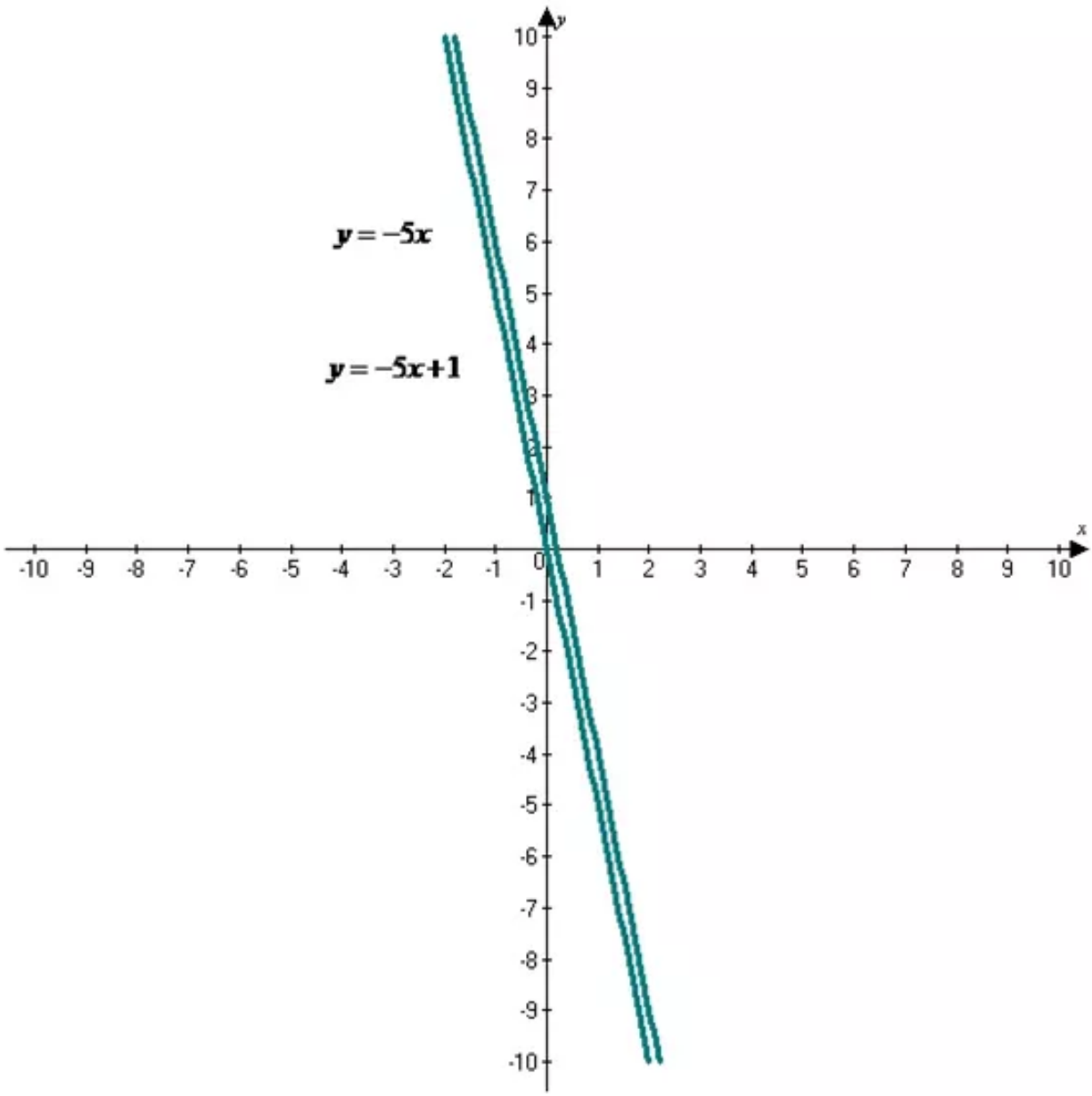
## Answer 47PA.

Need to find the equation whose graph is parallel to the graph of $y=-5x$

Need to find the equation whose graph is perpendicular to the graph $y=-5x$

Consider to draw the graph of $y=-5x$

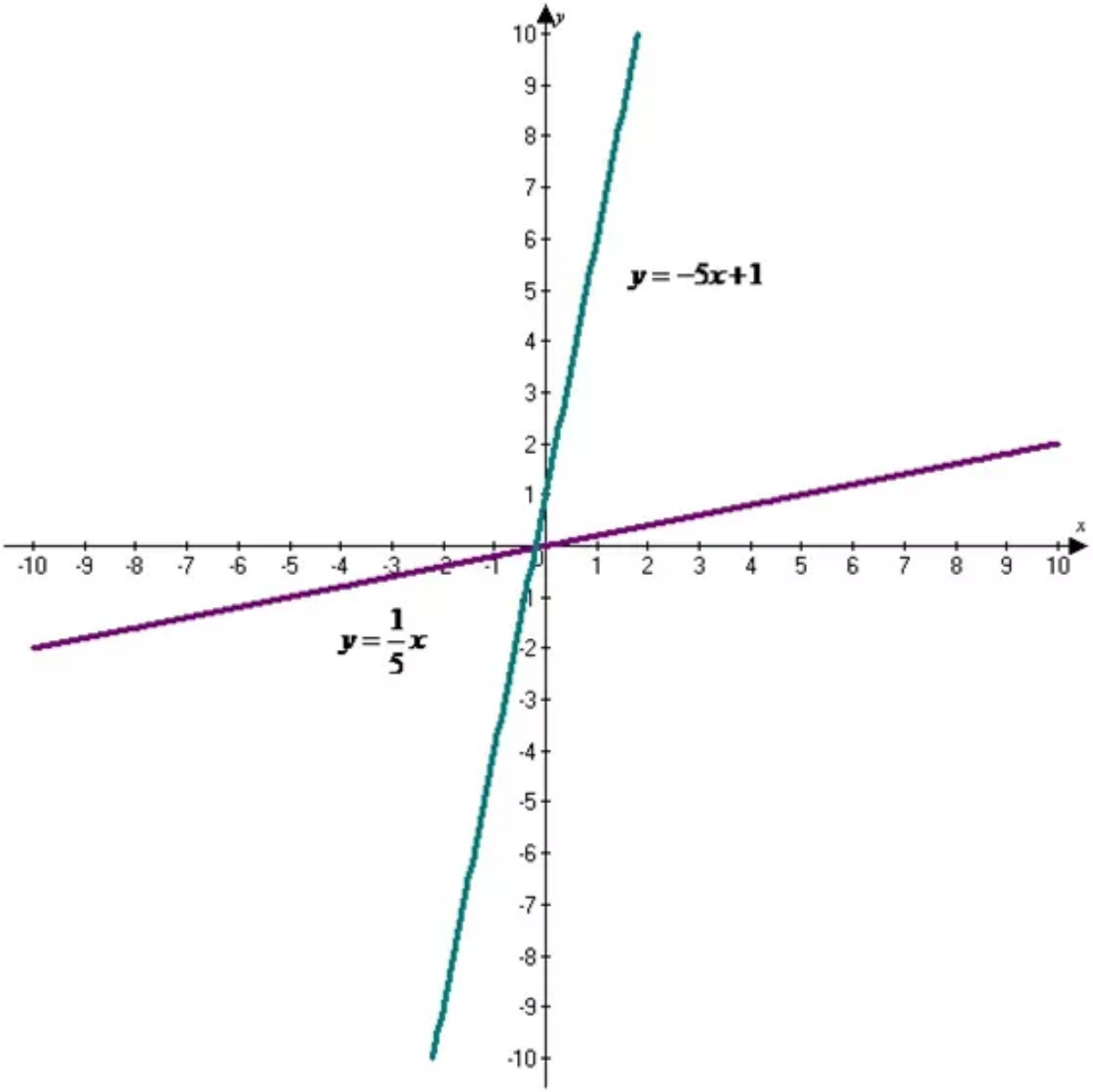
Let us take $x=-5x$ and the slope of the parallel line is $y=-5x+1$




Hence the required solution of the graph of equations has the same slope that they are parallel

Consider the equation whose graph is perpendicular to the graph $y = -5x$

And the slopes are negative reciprocals and of a perpendicular lines $y = \frac{1}{5}x$




We have same slopes of parallel line and perpendicular line of equations of graph are drawn above

Hence the required solution of the given equation has the same slopes

## Answer 48PA.

Need to find the slope of a line perpendicular to the graph of $3x+4y=24$

$(A)-\frac{4}{3}\quad(B)-\frac{3}{4}\quad(C)\frac{3}{4}\quad(D)\frac{4}{3}$

And find the slope of the equation

$$3x+4y=24$$
$$3x+4y-3x=24-3x \qquad \text{Adding } -3x \text{ on both sides}$$
$$4y=-3x+24$$
$$\frac{4}{4}y=-\frac{3}{4}x+\frac{24}{4} \qquad \text{Divided by 4 on both sides}$$

By simplification

$$y=-\frac{3}{4}x+6$$

So the equation of the line $y=-\frac{3}{4}x+6$ has the same slope $-\frac{3}{4}$ replace $m$ so slope of the perpendicular to the opposite reciprocal of $-\frac{3}{4}$ or $\frac{4}{3}$

Hence the required solution of perpendicular slope of the line of above multiply choices $(D)\frac{4}{3}$ is the correct answer.

## Answer 49PA.

Consider the options

$(A)$ Move the graph of the line right $2$ units

$(B)$ Change the slope of the graph from $4$ to $2$

$(C)$ Change the $y$ intercept from $4$ to $2$

$(D)$ Move the graph of the line left $2$ units

Need to find the how can the graph of $y=3x+4$ be used to graph $y=3x+2$ and state which option is correct

Let us take one equation $y=3x+4$

It is in the form of $y=mx+b$

Here $m$ is the slope of the line and $b$ is the $y$-intercept

By comparing here $m=3$ and $b=4$

Let us take another equation $y=3x+2$

It is in the form of $y=mx+b$

Here $m$ represents the slope of the line and $b$ is the $y$-intercept

By comparing here $m=3$ and $b=2$

For the both the equations the slope is same with $m=3$ but the $y$-intercept changes

One equation has the $y$-intercept of $4$ and the other one has $y$-intercept of $2$

By this we can say that the $y$ intercept change from $4$ to $2$

Thus the required correct option is $\boxed{\text{C) Change } y\text{-intercept from 4 to 2}}$

**Answer 50MYS.**

Need to find the point slope form of an equation for a line passes through each point with the given slope

Given that the point slope form of an equation line passes through point $(3,5)$

Given that the slope $m=-2$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the given point and slope in the point slope form

Solve the equation we get

$y-y_1=m(x-x_1)$ point slope form

$y-5=-2(x-3)$

Hence the required solution is in the point slope form of an equation that passes through each point with given slope $\boxed{y-5=-2(x-3)}$

**Answer 51MYS.**

Need to find the point slope form of an equation for a line that passes through each point with the given slope

Given that the point slope form of an equation line passes through the point $(-4,7)$

And slope $m=5$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the given point and slope in the point slope form

Solve the equation we get

$y-y_1=m(x-x_1)$ point slope form

$y-7=5(x-(-4))$

$y-7=5(x+4)$

Hence the required solution is in the point slope form of an equation for a line that passes through each point with the given slope $\boxed{y-7=5(x+4)}$

## Answer 52MYS.

Need to find the point slope form of an equation for a line that passes through each point with the given slope

Given that the point slope form of an equation line passes through the point $(-1,-3)$

And slope $m=-\frac{1}{2}$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the given point and slope in the point slope form

Solve the equation we get

$y-y_1=m(x-x_1)$ point slope form

$y-(-3)=-\frac{1}{2}(x-(-1))$

$y+3=-\frac{1}{2}(x+1)$

Hence the required solution is in the point slope form of an equation for a line that passes through each point with the given slope $\boxed{y+3=-\frac{1}{2}(x+1)}$

**Answer 53MYS.**

Consider the linear equation in slope intercept form

And find the cost $C$ of a $m$ minute call

Slope-intercept form in the form of $y = mx + b$

Consider the points $(x_1, y_1) = (10, 3.19)$ and $(x_2, y_2) = (15, 4.29)$

And find the slope

Slope formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Substitute the values in the slope formula

$$m = \frac{4.29 - 3.19}{15 - 10}$$

$$m = \frac{1.1}{5}$$

$$m = 0.22$$

And the slope $m = 0.22$

Substitute the values $(x_1, y_1) = (10, 3.19)$ and m=0.22 in the slope intercept form

Solve the equation

$$3.19 = 0.22(10) + c \qquad \text{Replace } x = 10$$

$$3.19 = 2.2 + c$$

$$3.19 - 2.2 = 2.2 + c - 2.2 \qquad \text{Adding } -2.2 \text{ on both sides}$$

$$c = 0.99$$

Now substitute values in the slope intercept form $y = mx + c$

$$y = 0.22m + 0.99$$

Hence the required solution of the linear slope intercept form is $\boxed{y = 0.22m + 0.99}$

**Answer 54MYS.**

Consider to find the cost of $12$ minute call

Consider the points $(x_1, y_1) = (10, 3.19)$ and $(x_2, y_2) = (15, 4.29)$

And find the slope

Slope formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Substitute the values in the slope formula

$$m = \frac{4.29 - 3.19}{15 - 10}$$

$$m = \frac{1.1}{5}$$

$$m = 0.22$$

And the slope $m = 0.22$

Substitute the values $(x_1, y_1) = (10, 3.19)$ and $m = 0.22$ in the slope intercept form

Solve the equation

$$3.19 = 0.22(10) + c \qquad \text{Replace } x = 10$$

$$3.19 = 2.2 + c$$

$$3.19 - 2.2 = 2.2 + c - 2.2 \qquad \text{Adding } -2.2 \text{ on both sides}$$

$$c = 0.99$$

Now substitute values in the slope intercept form $y = mx + c$

$$y = 0.22m + 0.99$$

Hence the required solution of the linear slope intercept form is $\boxed{y = 0.22m + 0.99}$

Use the slope-intercept form equation $y = 0.22x + 0.99$

Let us take $x = 12$

Substitute the value $x = 12$ in the equation $y = 0.22x + 0.99$ and solve the equation

$$y = 0.22x + 0.99 \qquad \text{Original equation}$$

$$y = 0.22(12) + 0.99 \qquad \text{Replace } x = 12$$

$$y = 2.64 + 0.99 \qquad \text{Simplify}$$

$$y = 3.63$$

Hence the required solution the cost of $12$ minute call is $\boxed{3.63}$

## Answer 55MYS.

Need to find the slope intercept form of an equation of the line passes through each pair of points

Given that the slope intercepts form of an equation of line that passes through the points

$(5,-1),(-3,3)$

Find the slope

$m=\frac{y_2-y_1}{x_2-x_1}$ Slope formulae

$m=\frac{3-(-1)}{-3-5}$ Replacing the values

$m=\frac{4}{-8}$

$m=-\frac{1}{2}$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the $(x_1,y_1)=(5,-1)$ and slope $m=-\frac{1}{2}$ in the point slope form

Solve the equation we get

$y-(-1)=-\frac{1}{2}(x-5)$ By distributive property $a(b+c)=ab+ac$

$y+1=-\frac{1}{2}x+\frac{5}{2}$

$y+1-1=-\frac{1}{2}x+\frac{5}{2}-1$ Adding $-1$ on both sides

$y=-\frac{1}{2}x+\frac{3}{2}$

Hence the required solution slope intercepts form of an equation of the line that passes through the point $\boxed{y=-\frac{1}{2}x+\frac{3}{2}}$

## Answer 56MYS.

Need to find the slope intercept form of an equation of the line passes through each pair of points

Given that the slope intercepts form of an equation of line that passes through the points

$(0,2),(8,0)$

Find the slope

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{0-2}{8-0}$$
$$m=\frac{-2}{8}$$
$$m=-\frac{1}{4}$$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the $(x_1,y_1)=(0,2)$ and slope $m=-\frac{1}{4}$ in the point slope form

Solve the equation we get

$$y-0=-\frac{1}{4}(x-2)$$ By distributive property $a(b+c)=ab+ac$

$$y=-\frac{1}{4}x+\frac{2}{4}$$
$$y=-\frac{1}{4}x+\frac{1}{2}$$
$$y=-\frac{1}{4}x+\frac{1}{2}$$

Hence the required solution slope intercepts form of an equation of the line that passes through the point $\boxed{y=-\frac{1}{4}x+\frac{1}{2}}$

**Answer 57MYS.**

Need to find the slope intercept form of an equation of the line passes through each pair of points

Given that the slope intercepts form of an equation of line that passes through the points

$(2,1),(3,-4)$

Find the slope

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{-4-1}{3-2}$$
$$m=\frac{-5}{1}$$
$$m=-5$$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the $(x_1,y_1)=(2,1)$ and slope $m=-5$ in the point slope form

Solve the equation we get

$$y-1=-5(x-2)$$ By distributive property $a(b+c)=ab+ac$
$$y-1=-5x+10$$
$$y-1+1=-5x+10+1$$ Adding 1 on both sides
$$y=-5x+11$$

Hence the required solution slope intercepts form of an equation of the line that passes through the point $\boxed{y=-5x+11}$

## Answer 58MYS.

Need to find the slope intercept form of an equation of the line passes through each pair of points

Given that the slope intercepts form of an equation of line that passes through the points

$(5,5),(8,-1)$

Find the slope

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{-1-5}{8-5}$$
$$m=\frac{-6}{3}$$
$$m=-2$$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the $(x_1,y_1)=(5,5)$ and slope $m=-2$ in the point slope form

Solve the equation we get

$$y-5=-2(x-5)$$ By distributive property $a(b+c)=ab+ac$

$$y-5=-2x+10$$

$$y-5+5=-2x+10+5$$ Adding 5 on both sides

$$y=-2x+15$$

Hence the required solution slope intercepts form of an equation of the line that passes through the point $\boxed{y=-2x+15}$

## Answer 59MYS.

Need to find the slope intercept form of an equation of the line passes through each pair of points

Given that the slope intercepts form of an equation of line that passes through the points

$(6,9),(4,9)$

Find the slope

$$m=\frac{y_2-y_1}{x_2-x_1}$$
$$m=\frac{9-9}{4-6}$$
$$m=\frac{0}{-2}$$
$$m=0$$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the $(x_1,y_1)=(6,9)$ and slope $m=0$ in the point slope form

Solve the equation we get

$y-9=0(x-6)$ By distributive property $a(b+c)=ab+ac$

$y-9=0$

$y-9+9=0+9$ Adding 9 on both sides

$y=9$

Hence the required solution slope intercepts form of an equation of the line that passes through the point $\boxed{y=9}$

## Answer 60MYS.

Need to find the slope intercept form of an equation of the line passes through each pair of points

Given that the slope intercepts form of an equation of line that passes through the points

$(-6,4),(2,-2)$

Find the slope

$$m=\frac{y_2-y_1}{x_2-x_1}$$

$$m=\frac{-2-4}{2-(-6)}$$

$$m=\frac{-6}{8}$$

$$m=-\frac{3}{4}$$

Formulae of point slope form $y-y_1=m(x-x_1)$

Substitute the $(x_1,y_1)=(-6,4)$ and slope $m=-\frac{3}{4}$ in the point slope form

Solve the equation we get

$$y-4=-\frac{3}{4}(x-(-6)) \qquad \text{By distributive property } a(b+c)=ab+ac$$

$$y-4=-\frac{3}{4}(x+6)$$

$$y-4+4=-\frac{3}{4}x-\frac{9}{2}+4 \qquad \text{Adding 4 on both sides}$$

$$y=-\frac{3}{4}x-\frac{1}{2}$$

Hence the required solution slope intercepts form of an equation of the line that passes through the point $\boxed{y=-\frac{3}{4}x-\frac{1}{2}}$