EXERCISE 12.3

Q1.If m = 2,find the value of :

(i)m – 2

Sol. :- *2 – 2 = 0*

(ii) 3m – 5

Sol. :- *3(2) – 5*

= 6 – 5 = 1

(iii) 9 – 5m

Sol. :- *9 – 5(2)*

= 9 – 10 = – 1

(iv) $3m^2 – 2m – 7$

Sol. :- *$3(2)^2 – 2(2) – 7$*

= 3(4) – 4 – 7

= 12 – 4 – 7

= 8 – 7 = 1

(v) $\frac{5m}{2}$ – 4

Sol. :- *$\frac{5(2)}{2}$ – 4*

= $\frac{10}{2}$ – 4

= 5 – 4 = 1

Q2. If p = -2, find the value of :

(i)4p + 7

Sol. :- *4(–2) + 7*

= - 8 + 7 = –1

(ii) $– 3p^2 + 4p + 7$

Sol. :- *$– 3(–2)^2 + 4(–2) + 7$*

= – 3(4) – 8 + 7

= – 12 – 8 + 7

= – 20 + 7 = -13

(iii) $– 2p^3 – 3p^2 + 4p + 7$

Sol. :- *$– 2 (–2)^3 – 3(–2)^2 + 4(–2) + 7$*

$= -2(-8) - 3(4) - 8 + 7$

$= 16 - 12 - 8 + 7$

$= 4 - 1 = 3$

Q3. Find the value of the following expressions, when x = -1:

(i)2x – 7

Sol. :- $2(-1) - 7$

$= -2 - 7 = -9$

(ii) –x + 2

Sol. :- $-(-1) + 2$

$= 1 + 2 = 3$

(iii)x^2 + 2x + 1

Sol. :- $(-1)^2 + 2(-1) + 1$

$= 1 - 2 + 1$

$= -1 + 1 = 0$

(iv) $2x^2$ – x – 2

Sol. :- $2(-1)^2 - (-1) - 2$

$= 2(1) + 1 - 2$

$= 2 + 1 - 2$

$= 3 - 2 = 1$

Q4. If a = 2, b = -2, find the value of :

(i)a^2 + b^2

Sol. :- $(2)^2 + (-2)^2$

$= 4 + 4 = 8$

(ii) a^2 + ab + b^2

Sol. :- $(2)^2 + 2(-2) + (-2)^2$

$= 4 - 4 + 4$

$= 0 + 4 = 4$

(iii) a^2 – b^2

Sol. :- $(2)^2 - (-2)^2$

$= 4 - 4 = 0$

Q5.When a = 0, b = -1, find the value of the given expressions :

(i)2a + 2b

Sol. :- *2(0) + 2(–1)*

= 0 – 2 = – 2

(ii)$2a^2 + b^2 + 1$

Sol. :- *$2(0)^2 + (–1)^2 + 1$*

= 0 + 1 + 1 = 2

(iii) $2a^2b + 2ab^2 + ab$

Sol. :- *$2(0)^2(–1) + 2(0)(–1)^2 + (0)(–1)$*

= 0 + 0 + 0 = 0

(iv) $a^2 + ab + 2$

Sol. :- *$(0)^2 + (0)(–1) + 2$*

= 0 + 0 + 2 = 2

Q6.Simplify the expressions and find the value if x is equal to 2

(i)x + 7 + 4(x - 5)

Sol. :- *x + 7 + 4x – 20*

= 5x + 7 – 20

= 5x – 13

= 5(2) – 13

= 10 – 13 = –3

(ii) 3(x + 2) + 5x – 7

Sol. :- *3x + 6 + 5x – 7*

= 8x + 6 – 7

= 8x – 1

= 8(2) – 1

= 16 – 1 = 15

(iii) 6x + 5(x - 2)

Sol. :- *6x + 5x – 10*

= 11x – 10

= 11(2) – 10

= 22 – 10 = 12

(iv)4(2x - 1) + 3x + 11

Sol. :- *8x – 4 + 3x + 11*

= 11x – 4 + 11

= 11x + 7

=11(2) + 7

=22 + 7 = 29

Q7. Simplify these expressions and find their values if x = 3, a = -1 , b = -2

(i)3x – 5 – x + 9

Sol. :- *3x – x – 5 + 9*

= 2x + 4

= 2(3) + 4

= 6 + 4 = 10

(ii)2 – 8x + 4x + 4

Sol. :- 2 + 4 – 8x + 4x

= 6 – 4x

= 6 – 4(3)

= 6 – 12 = – 6

(iii) 3a + 5 - 8a + 1

Sol.:-*3a – 8a + 5 + 1*

= -5a + 6

= -5(–1) + 6

= 5 + 6 = 11

(iv) 10 – 3b – 4 – 5b

Sol.:- *10 – 4 – 3b – 5b*

= 6 – 8b

= 6 – 8(– 2)

= 6 + 16 = 22

(v) 2a – 2b – 4 – 5 + a

Sol. :- *3a– 2b – 9*

$= 3(-1) - 2(-2) - 9$

$= -3 + 4 - 9$

$= 1 - 9$

$= -8$

Q8.(i) If z = 10 , find the value of $z^3 - 3(z - 10)$.

Sol.:- $(10)^3 - 3(10 - 10)$

$= 1000 - 3(0)$

$= 1000 - 0$

$= 1000$

(ii) If p = -10, find the value of $p^2 - 2p - 100$

Sol. :- $(-10)^2 - 2(-10) - 100$

$= 100 + 20 - 100$

$= 120 - 100$

$= 20$

Q9.What should be the value of a if the value of $2x^2 + x - a$ equals to 5, when x = 0 ?

Sol. :- $2x^2 + x - a = 5$

$2(0)^2 + 0 - a = 5$

$0 - a = 5$

$a = -5$

Q10.Simplify the expression $2(a^2 + ab) + 3 - ab$

and find its value when a = 5 and b = -3 .

Sol.:- $2(a^2 + ab) + 3 - ab$

$= 2a^2 + 2ab + 3 - ab$

$= 2a^2 + ab + 3$

$= 2(5)^2 + (5)(-3) + 3$

$= 2(25) - 15 + 3$

$= 50 - 15 + 3$

$= 35 + 3 = 38$

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