

Logarithms

QUESTIONS

1. Expansion of $\log_3\left(\frac{27x^3}{5}\right)$ equals to E, then $\frac{E}{3}$ is _____
- (a) $1 + \log_3 x - \frac{1}{3}\log_3 5$ (b) $3 + 3 \log_3 x + \log_3 5$
- (c) $1 + \log_3 x + \log_3 5$ (d) $\log_3 x + \frac{1}{3}\log_3 5$
- (e) None of these
2. Simplification of $5 \log 2 + 4 \log 3 + 2 \log 4 + \log 5 - 2 \log 9$ is _____
- (a) $\log 2156$ (b) $\log 256$
- (c) $\log 2560$ (d) $\log 3162$
- (e) None of these
3. Which of the following statements is not correct?
- (a) $\log_8 512 = 3$ (b) $\log_{10} 0.001 = -3$
- (c) $\log_5 125 = \frac{\log_1 125}{\log_1 125}$ (d) $\log_2 1 = 0$
- (e) None of these
4. Find the value of $\log_{\frac{1}{6}} 216\sqrt{6}$
- (a) $\frac{-5}{2}$ (b) $\frac{-7}{2}$
- (c) $\frac{-3}{2}$ (d) $\frac{5}{2}$
- (e) None of these
5. If $\log_{27\sqrt{3}} 729 = x$, then $\log x$ equals to:
- (a) $\log\left(\frac{5}{2}\right)$ (b) $\log\left(\frac{7}{12}\right)$
- (c) $\log\left(\frac{2}{5}\right)$ (d) $\log\left(\frac{12}{7}\right)$
- (e) None of these

6. If $x > 1$ and $a > 1$, then $\log_a x$ is _____

- (a) positive
- (b) negative
- (c) zero
- (d) both positive and negative
- (e) None of these

7. If $a > 1$ and $\log_a x$ is negative then _____

- (a) $x > 0$
- (b) $x > 1$
- (c) $-1 < x < 1$
- (d) $0 < x < 1$
- (e) None of these

8. For $x > 1$ and $\log_b x$ is negative, then:

- (a) $b > 0$
- (b) $0 < b < 1$
- (c) $b < 0$
- (d) $-1 < b < 1$
- (e) None of these

9. Which among the following statements is incorrect?

- (a) $\log_7 3 \cdot \log_{27} 4 \cdot \log_5 7 \cdot \log_{64} 5$
- (b) $\log_{\frac{3}{7}} 2.\bar{3} = -1$
- (c) $\log_{3-\sqrt{8}-\sqrt{5}} = -1$
- (d) All the above
- (e) None of these

10. If $a^6 = b^6 + c^6$, then the value of $\log_c(a^2 - b^2) + \log_c(a^2 + b^2 + ab) + \log_c(a^2 + b^2 + ab)$ is equal to

- _____
- (a) 1
 - (b) 3
 - (c) 6
 - (d) 0
 - (e) None of these

11. If $\frac{\log x}{\log y} = \frac{\log 121}{\log 11}$, then the relation between x and Y is _____

- (a) $x = \sqrt{y}$
- (b) $x^2 = y$
- (c) $x = y^2$
- (d) $x = 2y$
- (e) None of these

12. If $\log(x+3) - \log(2x-5) = 1$, then the value of x is _____

(a) $1\frac{15}{19}$

(b) $2\frac{15}{19}$

(c) 8

(d) 4

(e) None of these

13. Which of the following is least among the following?

$\log_4 260, \log_2 18, \log_7 2300, \log_5 630, \log_3 200$

(a) $\log_4 260$

(b) $\log_2 18$

(b) $\log_7 2300$

(d) $\log_3 225$

(e) None of these

14. The value of $\log_7 3 \cdot \log_{27} 4 \cdot \log_5 7 \cdot \log_{64} 5$ is _____

(a) $\frac{1}{2}$

(b) $\frac{1}{4}$

(c) $\frac{1}{8}$

(d) $\frac{1}{9}$

(e) None of these

15. Solve: $\frac{\log_{16}(\log_5 625)}{\log_{512}(\log_3 6561)}$

(a) $\frac{1}{6}$

(b) $\frac{5}{2}$

(c) $\frac{2}{3}$

(d) $\frac{3}{2}$

(e) None of these

16. $2^{4\log_2 5} + 3^{2\log_3 4} =$ _____

(a) 641

(b) 5

(c) 25

(d) 625

(e) None of these

17. If $\log[4 - 6 \log_{64} (x+5)] = 0$, then the value of x is _____

(a) 0

(b) 1

(c) 2

(d) 3

(e) None of these

18. If $\log_3 4 + \log_3 7 = x - 1$, then find the value of $\frac{\log_{10} 84}{\log_{10} 28}$.

(a) $\frac{x}{x+1}$

(b) $\frac{x+1}{x}$

(c) $\frac{x-1}{x}$

(d) $\frac{x}{x-1}$

(e) None of these

19. If $x^3 - y^3 = 1$, $x > y$, then find the value of $\log_{(x-y)} (x^2 + y^2 + xy)$

(a) 0

(b) 1

(c) -1

(d) Cannot be determined

(e) None of these

20. $\log\left(\frac{1}{2}\right) + \log\left(\frac{2}{3}\right) + \log\left(\frac{3}{4}\right) + \dots + \log\left(\frac{999}{1000}\right)$

(a) -3

(b) -2

(c) -1

(d) 0

(e) None of these

21. If $5^{\log_5 4} + 4^{\log_4 3} = 7$ then the value of x is _____

(a) 1

(b) 2

(c) 3

(d) 4

(e) None of these

22. If $\log_3 x - \log_3 y = \log_3 5 - \log_3 10$ and $3x = y + 2$ then y is equal to _____

(a) 4

(b) 3

(c) 2

(d) 1

(e) None of these

23. Find the value of $\log_{10} \left(\frac{2^2 \times 3^3}{5^3} \right)$ where it is given that $\log_{10} 2 = 0.3010$ and $\log_{10} 3 = 0.4771$

(a) 0.2373

(b) 2.0970

(c) 0.2070

(d) 0.2273

(e) None of these

24. Solve for x, the equation: $\log [\log 3 + \log 3(x+1)] = 0$

- (a) $2^8 + 1$ (b) $3^8 + 1$
(c) $2^7 - 1$ (d) $3^7 - 1$
(e) None of these

25. If $\log_x 1 / 32 = \frac{-5}{4}$ then the value of x is _____

- (a) 8 (b) 16
(c) 32 (d) 64
(e) None of these

26. If $4a \cdot b^{5 \log_b a} = 2916$ then the value of a is _____

- (a) 1 (b) 0
(c) 2 (d) 3
(e) None of these

27. If $\log 2 = 0.3010$, then the number of digits in 2^{512} is _____

- (a) 150 (b) 154
(c) 155 (d) 153
(e) None of these

28. The value of $\frac{2}{1 + 2 \log_{a^2 b^2} c} + \frac{2}{1 + 2 \log_{a^2 c^2} b} + \frac{2}{1 + 2 \log_{b^2 c^2} a}$ is equal to _____

- (a) 2 (b) 4
(c) 1 (d) $\log a^2 b^2 c^2$
(e) None of these

29. Which one of the following statements is true?

- (a) $\log_5 \sqrt{5 \sqrt{5 \sqrt{5 \dots \dots \infty}}} = 1$
(b) If $5^{\log_5 x} + 3x - 12 = 0$, then $x = 6$
(c) If $3^{\log_3(x-5)} + 3(x-5) - 4 = 0$, then $x = 3$
(d) All the above
(e) None of these

30. If $\log_{16} m = 4.5$ and $\log_4 n = 9$, then $m =$ _____

- (a) $\sqrt{n}$ (b) n^2
(c) n (d) $n\sqrt{n}$
(e) None of these

31. The value of the expression $(\log_{10} 2)^3 + \log_{10} 8 \cdot \log_{10} 5 + (\log_{10} 5)^3$ is equal to _____

- (a) 0 (b) 1
(c) 2 (d) 3
(e) None of these

32. $\frac{1}{\log_3 x} \cdot \frac{1}{\log_x 27} \cdot \frac{1}{\log_9 x} \cdot \frac{1}{\log_x 729}$

- (a) $\frac{1}{3}$ (b) 3
(c) 9 (d) $\frac{1}{9}$
(e) None of these

33. If the sum of two numbers m and n is $\sqrt{22}$ and their difference is $\sqrt{18}$ (where $m > n$), then the value of $\log_m n$ is equal to _____

- (a) 1 (b) 0
(c) -1 (d) 2
(e) None of these

34. If $x = \frac{\sqrt{8} + \sqrt{2}}{2}$ and $y = \frac{\sqrt{8} - \sqrt{2}}{2}$ then the value of $\log_{121} (x_2 + 4xy + y_2)$, equal to _____

- (a) 1 (b) $\frac{1}{2}$
(c) $\frac{13}{4}$ (d) 2
(e) None of these

35. If $\log_{(a^2 - b^2)} (a^2 + b^2 - 2ab)$ then find the value of.

- (a) 0 (b) 1
(c) $\frac{1}{4}$ (d) $\frac{1}{2}$
(e) None of these

ANSWER - KEY

1. (A)	2. (C)	3. (C)	4. (B)	5. (D)
6. (A)	7. (D)	8. (B)	9. (E)	10. (C)
11. (C)	12. (B)	13. (C)	14. (D)	15. (D)
16. (A)	17. (D)	18. (D)	19. (C)	20. (A)
21. (D)	22. (A)	23. (A)	24. (D)	25. (B)
26. (D)	27. (C)	28. (B)	29. (A)	30. (C)
31. (B)	32. (D)	33. (C)	34. (B)	35. (D)
36. (C)	37. (B)	38. (B)	39. (D)	40. (B)