Visit QB365-SLMS - https://www.qb365.in/slms/ Complete Questions and Answers

Answers Key:

Multiple Choice Question

1. $|x+2| \leq 9$
   $\Rightarrow -9 \leq x+2 \leq 9$
   $\Rightarrow -11 \leq x \leq 7$
   x belongs to $[-11, 7]$
2. (a) xb < yb
3. In $(-\infty, 2)$, $\frac{|x-2|}{x-2}$ is negative
   In$[2, \infty)$, $\frac{|x-2|}{x-2} \geq 0$
4. $5x - 1 < 24 \quad 5x + 1 > -24$
   $5x < 25 \quad 5x > -25$
   $x < 5 \; x > -5$
   $x \in (-5, 5)$
5. (b) $[2, \infty)$
6. Let $\log_{\sqrt{2}} 512 = x$
   Then $(\sqrt{2})^x = 2^9$
   $\Rightarrow 2^{\frac{x}{2}} = 2^9 \Rightarrow x/2 = 9 \Rightarrow x = 18$
7. Let $\log_3 \frac{1}{81} = x \Rightarrow 3^x = \frac{1}{81}$
   $\Rightarrow 3^x = 3^{-4}$
   $\Rightarrow x = -4$
8. $\log_{\sqrt{x}} 0.25 = 4$
   $(\sqrt{x})^4 = 0.25$
   $(\sqrt{x})^4 = \frac{1}{4}$
   $x^2 = \frac{1}{4}$
   $\Rightarrow x = \frac{1}{2} = 0.5$
9. $\log_a b \log_b c \log_c a = \log_a c \log_c a = \log_a a = 1$
10. (b) 7
11. $2x^2 + (a-3)x + 3a - 5 = 0$
    Sum $= \frac{-(a-3)}{2}$; Product $= \frac{3a-5}{2}$
    Given they are equal, $\frac{-(a-3)}{2} = \frac{3a-5}{2}$
    $-4a = -8$
    $a = 2$
12. $x^2 - kx + 16 = 0, a\&b$ are roots
    $a + b = k; ab = 16$
    $a^2 + b^2 = (a+b)^2 - 2ab$
    $32 = k^2 - 32$
    $k^2 = 64$
    $k = \pm 8 \Rightarrow k = -8, 8$
13. $x^2 + |x-1| = 1$
    $|x-1| = 1 - x^2$
    $1 - x^2 = x - 1$ (or) $1 - x^2 = -x + 1$
    $x^2 + x - 2 = 0 \; x^2 - x = 0$
    $(x+2)(x-1) = 0 \; x(x-1) = 0$
    $x = -2$ (or) $1 \; x = 0; x = 1$
    The roots are -2, 0, 1. Since -2 does not satisfy. The roots are 0 and 1.
    ∴ Number of solution is 2.
14. $3x^2 - 5x - 7 = 0$
    Let the roots be α, β
    $\Rightarrow$ Sum : $\alpha + \beta = \frac{5}{3}$
    Product : $\alpha\beta = \frac{-7}{3}$
    Now take the roots are $-\alpha, -\beta$
    $\Rightarrow$ Sum : $-\alpha - \beta \quad -(\alpha + \beta) = -\frac{5}{3}$
    Product : $(-\alpha)(-\beta) = \alpha\beta = \frac{-7}{3}$
    The reouired equation
    $x^2 + \frac{5}{3}x - \frac{7}{3} = 0$
    $3x^2 + 5x - 7 = 0$
15. $x^2 + ax + c = 0$
    $x^2 + dx + b = 0$
    8&2 are the roots 3. 3 are the roots
    $\therefore a = -10; c = 16 \quad d = -6, \quad b = 9$

$x^2 + ax + b = 0$

$x^2 - 10x + 9 = 0$

$\Rightarrow (x-1)(x-9) = 0$

$\therefore x = 1$ (or) 9

16. $x^2 - \mathrm{k}x + \mathrm{c} = 0$

a and b are the roots

$\therefore a + b = k, ab = c$

To find

$\sqrt{(a-b)^2 + 0^2} = a - b = \sqrt{(a+b)^2 - 4ab} = \sqrt{k^2 - 4c}$

17. $\frac{2}{x+2} + \frac{1}{x-1} = \frac{2x-2+x+2}{(x+2)(x-1)} = \frac{3x}{(x+2)(x-1)} = k = 3$

18. $\frac{1-2x}{3+2x-x^2} = \frac{\mathrm{A}}{3-x} + \frac{\mathrm{B}}{x+1}$

$1 - 2x = \mathrm{A}(x+1) + \mathrm{B}(3-x)$

Put $x = 3, -5 = \mathrm{A}(4) \Rightarrow \mathrm{A} = \frac{-5}{4}$

Put $x = -1, 3 = \mathrm{B}(4) \Rightarrow \mathrm{B} = \frac{3}{4}$

$\mathrm{A} + \mathrm{B} = \frac{-5}{4} + \frac{3}{4} = \frac{-2}{4} = \frac{-1}{2}$

19. (a) 4

20. The value of

$\log_3 11 \log_{11} 13 \log_{13} 15 \log_{15} 27 \log_{27} 81 = \log_3 81$

$= \log_3 3^4 = 4 \log_3 3 = 4$

QB 365 TM Study Material
QUESTION BANK 365