

Date Planned : __ / __ / __	Daily Tutorial Sheet – 2	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main (Archive)	Exact Duration: _____

11. If $x < 0, y < 0, x + y + \frac{x}{y} = \frac{1}{2}$ and $(x + y) \left(\frac{x}{y} \right) = -\frac{1}{2}$ then: (1990)
 (A) $x = y$ (B) $x \neq y$ (C) $x = 2y$ (D) Cannot be determined
12. Let $a > 0, b > 0, c > 0$. Then, both the roots of the equation $ax^2 + bx + c = 0$: (1979)
 (A) are real and negative (B) have negative real parts
 (C) have positive real parts (D) None of these
13. Find the set of all solutions of the equation $2^{|y|} - |2^{y-1} - 1| = 2^{y-1} + 1$. (1997)
14. Find the set of all x for which $\frac{2x}{2x^2 + 5x + 2} > \frac{1}{x+1}$ (1987)
15. Solve : $(5 + 2\sqrt{6})x^2 - 3 + (5 - 2\sqrt{6})x^2 - 3 = 10$ (1985)
16. Solve : $2\log_x a + \log_{ax} a + 3\log_b a = 0$, where $a > 0, b = a^2 x$ (1978)
17. A value of b for which the equations $x^2 + bx - 1 = 0$, $x^2 + x + b = 0$ have one root in common is: (2011)
 (A) $-\sqrt{2}$ (B) $-i\sqrt{3}$ (C) $i\sqrt{5}$ (D) $\sqrt{2}$
18. For all ' x ', $x^2 + 2ax + (10 - 3a) > 0$, then the interval in which ' a ' lies is: (2004)
 (A) $a \leq -5$ (B) $-5 < a < 2$ (C) $a > 5$ (D) $2 < a < 5$
19. If the roots of the equation $x^2 - 2ax + a^2 + a - 3 = 0$ are real and less than 3, then: (1999)
 (A) $a < 2$ (B) $2 \leq a \leq 3$ (C) $3 < a \leq 4$ (D) $a > 4$
20. Find all real values of x which satisfy $x^2 - 3x + 2 > 0$ and $x^2 - 2x - 4 \leq 0$.

Fill in the blanks.

21. The sum of all the real roots of the equation $|x - 2|^2 + |x - 2| - 2 = 0$ is _____. (1997)
22. If the product of the roots of the equation $x^2 - 3kx + 2e^{2\ln k} - 1 = 0$ is 7, then $k = \dots$ (1984)
23. If $2 + i\sqrt{3}$ is a root of the equation $x^2 + px + q = 0$, where p and q are real, then $(p, q) = (\dots)$. (1982)