

SET 2

1. For the equation $3x^2 + px + 3 = 0, p > 0$ if one of the roots is square of the other then p is equal to
 - (a) 3
2. If $\alpha, \beta (\alpha < \beta)$ are the roots of the equation $x^2 + bx + c = 0$ where $c < 0 < b$ then
 - (a) $\alpha < 0 < \beta < |\alpha|$
3. If $b > \alpha$ then the equation $(x - a)(x - b) = 1$ has
 - (a) both roots in $[a, b]$
 - (b) both roots in $(-\infty, a)$
 - (c) one root in $(-\infty, a)$ and the other roots in (b, ∞)
4. The number of solution of the equation $\sqrt{x+1} - \sqrt{x-1} = \sqrt{4x-1}$ is
 - (a) 0
5. The value of a for which the equation $2x^2 + 2\sqrt{6}x + a = 0$ has equal roots is
 - (a) 3
 - (b) 4
 - (c) 2
 - (d) $\sqrt{3}$
 - (e) $\sqrt{2}$
6. The solution of the equation $(3 + 2\sqrt{2})^{x^2-8} + (3 + 2\sqrt{2})^{8-x^2} = 6$ are
 - (a) $3 \pm 2\sqrt{2}$
 - (b) ± 1
 - (c) $\pm 3\sqrt{3}, \pm 2\sqrt{2}$
 - (d) $\pm 7, \pm \sqrt{3}$
 - (e) $\pm 3, \pm \sqrt{7}$
7. If a,b,c are the sides of a triangle ABC such that $a \neq b \neq c$ and $x^2 - 2(a+b+c)x + 3\lambda(ab + bc + ca) = 0$ has real roots then
 - (a) $\lambda < \frac{4}{3}$
 - (b) $\lambda > \frac{5}{3}$
 - (c) $\lambda \in (\frac{4}{3}, \frac{5}{3})$
 - (d) $\lambda \in (\frac{1}{3}, \frac{5}{3})$
8. If $e^{\cos x} - e^{-\cos x} = 4$ then the value of the $\cos x$ is
 - (a) $\log(2+\sqrt{5})$

- (b) $-\log(2+\sqrt{5})$
 (c) $\log(-2+\sqrt{5})$
 (d) none of these
9. $\sin A, \sin B, \cos A$ are in GP, Roots of $x^2 + 2x \cot B + 1 = 0$ are always
 (a) real
 (b) imaginary
 (c) greater than 1
 (d) equal
10. If $a = \log_2 3, b = \log_2 5, c = \log_7 2$ then $\log_{140} 63$ in terms of a,b,c is
 (a) $\frac{2ac+1}{2c+abc+1}$
 (b) $\frac{2ac+1}{2a+c+a}$
 (c) $\frac{2ac+1}{2c+ab+a}$
 (d) none of these
11. If α and β are the roots of the equation $ax^2 + bx + c = 0 (c \neq 0)$ then equation whose roots are $\frac{1}{a\alpha+b}$ and $\frac{1}{a\beta+b}$ is
 (a) $acx^2 - bx + 1 = 0$
 (b) $x^2 - acx + bc + 1 = 0$
 (c) $acx^2 + bx - 1 = 0$
 (d) $x^2 + acx - bc + 11 = 0$
 (e) $acx^2 - bx - 11 = 0$
12. If α, β be the roots of $x^2 - a(x-1) + b = 0$ then the value of $\frac{1}{\alpha^2 - a\alpha} + \frac{1}{b^2 - a\beta} + \frac{2}{a+b}$ is
 (a) $\frac{4}{a+b}$
 (b) $\frac{1}{a+b}$
 (c) 0
 (d) -1
13. The number of real roots of the equation $x^4 + \sqrt{x^4 + 20} = 22$ is
 (a) 4
 (b) 2
 (c) 0
 (d) 1
14. Let a,b,c be real if $ax^2 + bx + c = 0$ has two real roots α, β where $\alpha < -2$ and $\beta > 2$ then

(a) $4 - \frac{2b}{a} + \frac{c}{a} < 0$

(b) $4 + \frac{2b}{a} - \frac{c}{a} < 0$

(c) $4 - \frac{2b}{a} + \frac{c}{a} = 0$

(d) $4 + \frac{2b}{a} + \frac{c}{a} = 0$