

# NEW STANDARD ACADEMY

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CLASS 10 (Maths) DPP (Academy)14-05-2024

- Number of real solution of  $(X^27x + 11)^{x^2-11x+30} = 1$  is
  - 4
  - 5
  - 6
  - No solution
- If 'r' and 's' are the roots of equation  $ax^2+bx+c = 0$  is
  - $\frac{b^2-4ac}{2a}$
  - $b^2-4ac$
  - $\frac{b^2-4ac}{c^2}$
  - $\frac{b^2-2ac}{c^2}$
- If the sum of the two roots of the equation  $\frac{1}{x+a} + \frac{1}{x+b} = \frac{1}{c}$  is zero, then the product of two roots is \_\_\_\_
  - 0
  - $\frac{a^2+b^2}{2}$
  - $\frac{a+b}{2}$
  - $-\frac{(a^2+b^2)}{2}$
- A group of girls planned a picnic. The budget for food was rs. 2400. Due to illness, 10 girls could not go to picnic and cost of food for each girl increased by RS. 8 . How many girls had planned the picnic?
  - 60
  - 50
  - 65
  - 57
- The number of root satisfying the equation  $\sqrt{5-x} = x\sqrt{5-x}$  is / are :
  - 1
  - 2
  - 3
  - 0
- If 2 is a root of the equation  $x^2+bx+12=0$  and the equation  $x^2+bx+q -0$  has equal roots, then q =
  - 8
  - 8
  - 16
  - 16
- If  $\alpha$  and  $\beta$  are the root of the quadration  $x^2-6x-2=0$  and if  $a_n = \alpha^n - \beta^n$ , then the value of  $\frac{a_{10}-2a_8}{2a_9}$  is:
  - 6.0
  - 5.2
  - 5.0
  - 3.0
- What will be the difference of the roots of quadratic equation  $4y^2-4y+1=0$ ?
  - 0
  - 1
  - $-\frac{1}{2}$
  - 2
- Graph drawn from the equation  $y= x^2-3x- 4$  will be:
  - Circle
  - Parabola
  - Straight line
  - Hyperbola
- If roots of the equation  $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$  are equal then  $bc - ad =$  \_\_\_\_
  - 1
  - 0
  - 1
  - 2

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1. If  $x = \sec\theta - \tan\theta$  and  $y = \operatorname{cosec}\theta + \cot\theta$ , then prove that  $xy + 1 = y - x$
2. Prove that  $\frac{\sin x - \cos x + 1}{\sin x + \cos x - 1} = \sec x + \tan x$ .
3. If  $2 \cos x + \sin x = 1$  then find the value of  $7 \cos x + 6 \sin x$ .
4. If  $\sin x + \sin^2 x + \sin^3 x = 1$  then find the value of  $\cos^6 x - 4 \cos^4 x + 8 \cos^2 x$ .
5. Let  $(-3, -4)$  be a point on the terminal side of  $\theta$ . Find the sine cosine and tangent of  $\theta$
6. Evaluate each of the following trigonometric functions:
  - a)  $\cos \frac{4\pi}{3}$
  - b)  $\tan (-210^\circ)$
  - c)  $\operatorname{cosec} \frac{11\pi}{4}$
7. State if the given angles are coterminal .
  - i)  $-185^\circ, 535^\circ$
  - ii)  $1000^\circ, 270^\circ$
  - iii)  $\frac{15\pi}{4} - \frac{17\pi}{4}$
8. If  $\operatorname{cosec} A + \cot A = \frac{11}{2}$ , then  $\tan A =$ 
  - a)  $\frac{21}{22}$
  - b)  $\frac{15}{16}$
  - c)  $\frac{44}{117}$
  - d)  $\frac{117}{43}$
9. If  $\sin \theta = \frac{24}{25}$  and  $\theta$  lies in the second quadrant, then  $\sec \theta + \tan \theta =$ 
  - a) -3
  - b) -5
  - c) -7
  - d) -9
10. If  $\sin(\alpha - \beta) = \frac{1}{2}$  and  $\cos(\alpha + \beta) = \frac{1}{2}$ , where  $\alpha$  and  $\beta$  are positive acute angles, then
  - a)  $\alpha = 45^\circ, \beta = 15^\circ$
  - b)  $\alpha = 15^\circ, \beta = 45^\circ$
  - c)  $\alpha = 60^\circ, \beta = 15^\circ$
  - d) None of these