Pinnacle EduCare
Dream it • Do it
JEE / NEET / Olympiads / NTSE / Boards

Date: 11-06-2021

Class: 10th Genesis

Subject: Maths

Test code: SEP07(21041307)

M. Marks: 30

1. Do the equations – 2x – 3y = 1 and 6y + 4x = - 2 represent a pair of coincident lines? (1 marks)
2. What is the condition on k if the pair of equations y = x and y = x + k is inconsistent? (1 marks)
3. For what value of k, are the equations y = x and y = kx inconsistent? (1 marks)
4. If $2x = \sec\theta$ and $\frac{2}{x} = \tan\theta$, then find the value of $2\left(x^2 - \frac{1}{x^2}\right)$. (1 marks)
5. Find a value of θ, for the which $\sin 2\theta = 1$, $0° < \theta < 90°$. (1 marks)
6. Write the maximum value of $\frac{1}{\text{cosec}\,\theta}, 0^o < \theta \le 90^o$. (1 marks)
7. What is the value of $\cos^2 67^o - \sin^2 23^o$? (1 marks)
8. Prove the following: (2 marks)

   (i) $\frac{\sin(90^o - \theta) \times \cot(90^o - \theta)}{\sin\theta + \cos(90^o - \theta)} = \frac{1}{2}$
9. Solve the following pair of linear equation by the substitution method. (2 marks)

   (i) $\sqrt{2}x + \sqrt{3}y = 0$

   (ii) $\sqrt{2}x - \sqrt{3}y = 0$
10. Find the value of p for which the pair of equations x + 2 y = 2, 2 x + py = 5 has no solution. (2 marks)
11. If $\frac{\cos\theta - \sin\theta}{\cos\theta + \sin\theta} = \frac{1-\sqrt{3}}{1+\sqrt{3}}, 0^o < \theta < 90^o$, find the angle θ. (2 marks)
12. Formulate the following problem as a pair of linear equations: (2marks)

    (i) Roohi travels 300 km to her home partly by train and partly by bus. She takes 4 hours is she travels 60 km by train and the remaining by bus. If she travels 100 km by train and the remaining by bus, she take 10 minutes longer. Find the speed of the train and the bus separately.
13. For what value of k, will the following system equations have infinitely many solutions? (2 marks)
    2x + 3y = 4 and (k + 2) x + 6y = 3k +2.
14. Using the identify $\sec^2 A - \tan^2 A = 1$, prove that $\frac{\sin A - \cos A + 1}{\sin A + \cos A - 1} = \sec A + \tan A$. (4 marks)
15. Solve for x and y: (4 marks)

(i) $\frac{5}{x-1}+\frac{1}{y-2}=2, \frac{6}{x-1}-\frac{3}{y-2}=1.$