Latex Assignment12

D.V.S. NIKHIL

28 August, 2023

Ex 11.10.3

1. Reduce the following equations into slope-intercept form and find their slopes and the y-intercepts:

   (i) $x + 7y = 0$

   (ii) $6x + 3y - 5 = 0$

   (iii) $y = 0$

2. Reduce the following equations into intercept form and find their intercepts on the axes:

   (i) $3x + 2y - 12 = 0$

   (ii) $4x - 3y = 6$

   (iii) $3y + 2 = 0$

3. Reduce the folloeing equations into normal form. Find their perpendicular distances from the origin and angle between perpendicular and the positive x-axis:

   (i) $x - \sqrt{3}y + 8 = 0$

   (ii) $y - 2 = 0$

   (iii) $x - y = 4$

4. Find the distance of the point $(-1, 1)$ from the line $12(x + 6) = 5(y - 2)$.

5. Find the points on the x-axis, whose distances from the line $\frac{x}{3} + \frac{y}{4} = 1$ are 4 units.

6. Find the distance between parallel lines:

   (i)

   $$15x + 8y - 34 = 0 \text{ and } 15x + 8y + 31 = 0 \tag{1}$$

   (ii)

   $$l(x + y) + p = 0 \text{ and } l(x + y) - r = 0 \tag{2}$$

7. Find equation of the line parallel to the line $3x - 4y + 2 = 0$ and passing through the point $(-2, 3)$.

8. Find equation of the line perpendicular to the line $x - 7y + 5 = 0$ and having x intercept 3.

9. Find angles between the lines $\sqrt{3}x + y = 1$ and $x + \sqrt{3}y = 1$.

10. The line through the points $(h, 3)$ and $(4, 1)$ intersects the line $7x - 9y - 19 = 0$ at right angle. Find the value of h.

11. Prove that the line through the point (x, y) and parallel to the line $Ax + By + C = 0$ is
$A(x - x_1) + B(y - y_1) = 0$.

12. Two lines passing through the point $(2, 3)$ intersects each other at an angle at $60°$. If the shape of one line is 2, find equation of the other line.

13. Find the equation of the right bisector of the line segment joining the point $(3, 4)$ and $(-1, 2)$.

14. Find the coordinates of the foot of perpendicular4 from the point $(-1, 3)$ to the line $3x + 4y - 16 = 0$

15. The perpendicular from the origin to the line $y = mx + c$ meets it at the point $(-1, 2)$. Find the values of m and c.

16. If p and q are the lengths of perpendiculars from the origin to the lines $x \cos\theta - y \sin\theta = k \cos 2\theta$ and $x \sec\theta + y \operatorname{cosec}\theta = k$ respectively, prove that $p^2 + 4q^2 = k^2$.

17. In the triangle ABC ith vertices $A(2, 3), B(4, -1)$ and $C(1, 2)$, find the equation and length of altitude from the vertex A.

18. If p is the length of perpendicular from the origin to the line whose intercepts on the axes are a and b, then show that $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$.