

STRAIGHT LINE

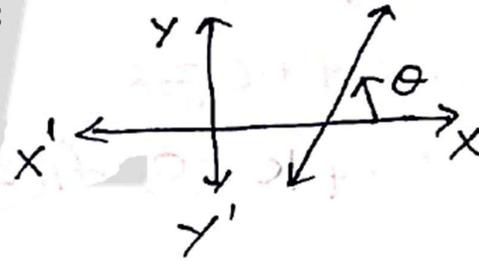
1. distance b/w two Points

$$\begin{array}{ccc}
 A & \text{-----} & B \\
 (x_1, y_1) & & (x_2, y_2) \\
 AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}
 \end{array}$$

2. If A, B, C are collinear i.e A, B, C lies on a line then $AB + BC = AC$ or area of $\Delta = 0$

$$x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) = 0$$

3. Slope of straight line (S.L.) is the tangent of angle made by the line in Anticlockwise direction of x-axis



4. Slope of x-axis = 0 { $\theta = 0^\circ$ }

5. slope of y-axis = ∞ { $\theta = 90^\circ$ }

$$\begin{array}{ccc}
 6. & A & \text{-----} & B \\
 & (x_1, y_1) & & (x_2, y_2) \\
 & \text{Slope of AB} = & y_2 - y_1 / x_2 - x_1
 \end{array}$$

7. Angle b/w two lines having slope m_1 and m_2 is

$$\tan\theta = | m_2 - m_1 / 1 + m_1 m_2 |$$

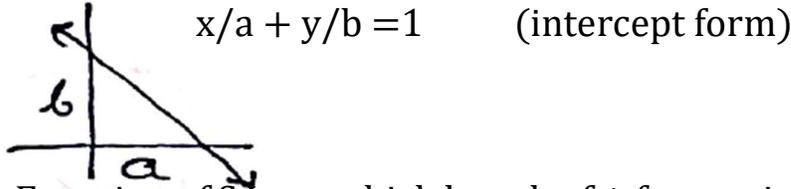
8. For Parallel lines $m_1 = m_2$.

9. For Perpendicular lines $m_1 \cdot m_2 = -1$

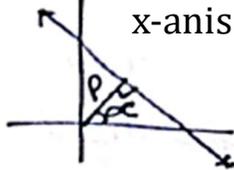
10. Equation of S.L. which is Passing through (x_1, y_1) and Slope m
 $y - y_1 = m(x - x_1)$

11. Equation of S.L. which is Passing through (x_1, y_1) and (x_2, y_2)
 $y - y_1 = y_2 - y_1 / x_2 - x_1 (x - x_1)$

12. Equation of S.L which cuts intercept 'a' on x-axis, 'b' on y-axis

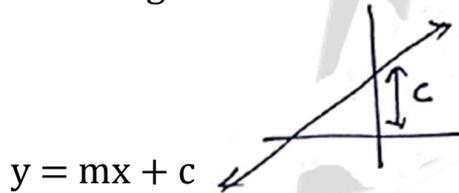


13. Equation of S.L. on which length of \perp from origin is 'p' and this \perp makes α with x-axis

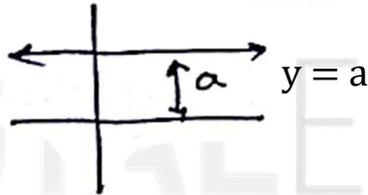


$x \cos \alpha + y \sin \alpha = p$
(Normal form)

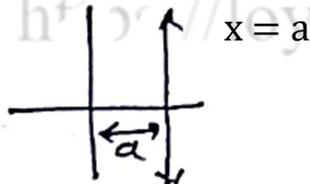
14. Equation of straight line which cut intercept 'c' on y-axis and having slope m



15. Equation of line Parallel to x-axis



16. Equation of line Parallel to y-axis



17. Standard form of S.L.

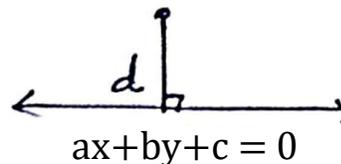
$ax + by + c = 0$

Ex. $3x + 5y + 9 = 0$

etc.

18. Distance of a line $ax+by+c$ from a Point, (x_1, y_1)

$d = |ax_1 + by_1 + c|/\sqrt{a^2 + b^2}$



LOYAL EDUCATION MATHEMATICS

Result Oriented

(DAILY PRACTICE PAPER)

[CLASS XI]

19. If we have given 'd' and find a variable x or y then we should put d as $\pm d$.

20. distance b/w two Parallel lines:

$$\text{let } ax+by+c_1 = 0 \text{ --①}$$

$$ax+by+c_2 = 0 \text{ --②}$$

$$d = |c_1 - c_2| / \sqrt{a^2 + b^2}$$

Note: two lines are Parallel If coefficients of x & y are same.

21. Equation of a line Parallel to the

$$ax+by+c = 0 \text{ is}$$

$$ax + by + k = 0, \text{ find } k$$

by given condition.

22. Eq. of line \perp to $ax+by+c=0$ is $bx - ay + k = 0$, find k by using given condition.

22. Conversion of $ax+by+c=0$ into slope intercept form ($y=mx+c$)

let equation $ax+by+c=0$

$$\therefore y = -a/b x - c/b$$

Here $m = -a/b$ intercept on y-axis = $-c/b$

23. Conversion of $ax+by+c$ into intercept form ($x/a + y/b = 1$)

Let Eq. is $ax+by+c=0$

$$ax+by=-c$$

divide by -c both sides $-a/c x - b/c y = 1$

$$\text{Intercept on x-axis} = -c/a$$

$$\text{Intercept on y-axis} = -c/b$$

24. Conversion of $ax+by+c=0$ into normal form ($x\cos\alpha + y\sin\alpha = p$)

we have $ax+by+c=0$

$$ax+by=-c$$

divide both side by $\sqrt{a^2+b^2}$

$$a/\sqrt{a^2+b^2} x + b/\sqrt{a^2+b^2} y = -c/\sqrt{a^2+b^2}$$

Here $\cos\alpha = a / \sqrt{(a^2 + b^2)}$, $\sin\alpha = b / \sqrt{(a^2 + b^2)}$

Find common angle α which satisfy both cos and sin perp. from origin = $-c / \sqrt{(a^2 + b^2)}$

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[CLASS XI]

25. If two lines are Parallel then their slopes are equal $m_1 = m_2$.
26. If two lines are \perp then $m_1 \times m_2 = -1$ or $m_1 = -1/m_2$
27. To find equation of S.L. we should 1st think about Point of Passing of line and slope of line by using given conditions.



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