

CHAPTER -10**STRAIGHT LINES****Points to be remembered :**

1) Distance between two points (x_1, y_1) & (x_2, y_2) is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

2) Centroid of a triangle having vertices (x_1, y_1) , (x_2, y_2) & (x_3, y_3) is $((x_1 + x_2 + x_3)/3, (y_1 + y_2 + y_3)/3)$

3) Incentre of a triangle is given by $((ax_1 + bx_2 + cx_3)/(a + b + c), (ay_1 + by_2 + cy_3)/(a + b + c))$

4) Equation of a line having slope 'm' & Y- intercept 'c' is given by $y = mx + c$

5) Equation of a line passing through a given point (x_1, y_1) & having slope 'm' is given by $y - y_1 = m(x - x_1)$

6) Equation of a line passing through two given points (x_1, y_1) & (x_2, y_2) is given by $y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$

$$\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$$

7) Equation of a line making intercepts 'a' & 'b' from the co-ordinate axis is given by $x/a + y/b = 1$

8) Equation of a line in normal form is given by $x \cos \alpha + y \sin \alpha = p$

9) Angle between two lines having slopes 'm₁' & 'm₂' is given by

$$\tan \theta = \frac{m_1 - m_2}{1 + m_1 m_2}$$

a) Two lines will be parallel if $m_1 = m_2$ & perpendicular

if $m_1 m_2 = -1$

- 10) Distance of a point (x_1, y_1) from the line $ax + by + c = 0$ is given by

$$\frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}}$$

SHORT ANSWER TYPE QUESTIONS

- 1) Find the incentre of the triangle whose vertices are $(1,2), (3,4)$ & $(-5,4)$
- 2) Find the equation of the line having slope '2' & passing through the point $(3, -5)$
- 3) Find the equation of the line passing through two given points $(-4, 3)$ & $(4,6)$
- 4) Find the distance of the point (x,y) from the origin.
- 5) Write the slope of the line which is parallel to x- axis.
- 6) Find 'x' if the points $(-2,3), (3,5)$ & $(x,4)$ are collinear.
- 7) Find the angle between the lines $2x - 3y + 2 = 0$ & $x - 2y = 5$
- 8) Find the point on the line $2x + 5y + 4 = 0$ whose ordinate is 5
- 9) Find 'x' if the point $(x,5)$ is equidistance from the points $(6,7)$ & $(3,8)$
- 10) Find the equation of the line passing through the point $(2, -1)$ & making an angle of 30° with x- axis.

LONG ANSWER TYPE QUESTIONS (4/6) MARKS

- 1) Find the co-ordinates of the foot of the perpendicular from the point $(-1, 3)$ to the line $3x - 5y = 4$
- 2) Find the distance of the point $(2, 5)$ from the line $x/2 + y/3 = 1$ measured parallel to the line $y = 2x + 3$
- 3) If 'p' & 'q' be the lengths of perpendiculars from the origin to the lines $x \cos\theta - y \sin\theta = k \cos 2\theta$ & $x \sec\theta + y \operatorname{cosec}\theta = k$, respectively, prove that $p^2 + 4q^2 = k^2$
- 4) In triangle ABC with vertices $A(2, 3), B(4, -1)$ & $C(1, 2)$ find the equation & length of altitude from the vertex A.
- 5) Find the image of the point $(2, 5)$ with respect to the line $3x - 5y = 2$, considering the line as a plane mirror.
- 6) Find the equation of a line drawn perpendicular to the line $x/4 + y/6 = 1$, through the point where it meets the y-axis.
- 7) If the lines $y = 3x + 1$ & $2y = x + 3$ are equally inclined to the line $y = mx + 4$, find the value of 'm'
- 8) Find the equation of the line through the intersection of the lines $4x + 7y = 3$ & $5x - y = 0$ & perpendicular to the line $3x - 2y = 0$
- 9) Find the equation of the line mid way between the parallel lines $9x - 6y - 7 = 0$ & $3x + 2y + 6 = 0$
- 10) Find the co-ordinates of the incentre of the triangle formed by the lines $y = 15$, $5x - 12y = 0$ & $3x + 4y = 0$