

CLASS –XI
ASSIGNMENT- 2

SUBJECT – MATHEMATICS
TOPIC – STRAIGHT LINES

- Q1. Prove that lines $3x + y - 14 = 0$, $x - 2y = 0$ & $3x - 8y + y = 0$ are concurrent. Also find co-ordinates of pt of concurrence.
- Q2. Find eq of line which passes through pt. (3, 2) if the portion of line intercepted between the axes is bisected at the point.
- Q3. Find the equation of two straight line passing through (4, -2) and making an angle of 45° with the line $8x + 7y - 1 = 0$. Show that those two lines are at right angles to one another.
- Q4. The mid points of the sides of a triangle are (2, 1), (-5, 7) and (-5, -5). Find the equations of the sides.
- Q5. Prove that the perpendicular drawn from the point (4, 1) on the join of (2, -1) and (6, 5) divides it in the ratio 5:13.
- Q6. Find eq of straight line which passes through pt (22, -6) & is such that intercept on x-axis exceeds intercept on y axis by 5.
- Q7. Find the angle between the lines which have intercept 3, 4 and 1, 8 on the axis respectively.
- Q8. Find eq of the straight line which cuts off intercept on x axis twice that on y-axis and is at a unit distance from origin.
- Q9. Find the equation of a line parallel to $2x + 3y + 11 = 0$ and the sum of its intercepts on the axis is 15.
- Q10. Find the image of the point (-8, 12) with respect to the line mirror $4x + 7y + 13 = 0$
- Q11. Find the equation of a line which divides the join of (1, 0) and (3, 0) in the ratio 2:1 and perpendicular to it.
- Q12. A line through the points (a, 2a) and (-2, 3) is perpendicular to the line $4x + 3y + 5 = 0$, find the value of 'a'.
- Q13. If lines $ax + 2y + 1 = 0$, $bx + 3y + 1 = 0$ and $cx + 4y + 1 = 0$ are concurrent, show that a, b, c are in A.P.
- Q14. Prove that the points (1, 3), (3, 5) and (5, 7) are collinear. Also find the equation of the line.
- Q15. Transform the equation of the line $x + y + 4 = 0$ to (i) slope intercept form and find its slope and y intercept (ii) intercept form and find intercepts on the coordinate axes (iii) normal form and find the inclination of the perpendicular segment from the origin on the line with x=axis and also find its length.
- Q16. Find equation of line passing through intersection of lines $x + y + 3 = 0$ & $x - y + 2 = 0$ and having y – intercept equal to 4.
- Q17. One side of a rectangle is along line $4x + 7y + 5 = 0$. Two of its vertices are (-3, 1) & (1, 1). Find eqs of other three sides.

- Q18. The vertices of a triangle are A (-2, 1), B(6, -2) and C (4, 3). Find the lengths of the altitudes of the triangle.
- Q19. Find the equations of the lines which are at a distance of $\frac{1}{2}$ from the origin and pass through the point (0, 1).
- Q20. Find the equation of the line joining the points (3, -1) and (2, 3). Also find equation of line perpendicular to this line and passing through point (5, 2).
- Q21. Find the new co-ordinates of the point in each of the following cases if the origin is shifted to the point (-1, -2) by translation of axes.
- a) (2,3)
 - b) (-5, -4)
 - c) (-1, 4)
- Q22. Find what the following equation becomes when the origin is shifted to (2,3)
- a) $x^2 = 4ay$
 - b) $x^2 - y^2 = 4$
 - c) $x+2y = 7$