ASSIGNMENT: STRAIGHT LINE BY- **RAJEEV KUMAR**

Std: XI **(09891976694)**

Q.1 If one diagonal of a square is 8x-15y=0 and one of its vertex is (1,2). Find the equations of the sides which pass through this vertex.

Q.2 Find the equation of the lines through the point of intersection of lines x-y+1=0 and 2x-3y+5=0 and whose distance from the point (3,2) is 7/5.

Q.3 Find the equation of lines passing through the point (1,0) and at a distance $\sqrt{3}/2$ from origin.

Q.4 In what direction should a line be drawn through the point (1,2) so that its point of intersection with the line x+y=4 is at a distance $\sqrt{6}/3$ from this point.

Q.5 a) Find slope of the lines which cuts off intercepts of equal lengths between the axes.
b) Find ratio in which the line 3x+4y+2=0 divide the distance between the lines 3x+4y+5=0 and 3x+4y-5=0.

Q.6 Opposite vertices of a square be (1,2) and (5,8). find the coordinates of other two vertices. Also find the equations of each sides.

Q.7 If the vertices of a triangle have Integral coordinates. Show that the triangle cannot be equilateral.

Q.8 If a triangle has one of its angle is 30^0 then show that it cannot have all the vertices with Integral coordinates.

Q.9 If the coordinates of mid points of sides of triangle ABC be P(1,2) Q(0,-1) R(2,-1). Find the coordinates of its vertices. Also find the ratio of the areas of both the triangles.

Q.10 a) Find the equation of line lies equidistant between the lines y=10 and y+2=0.
b) Find the equation of line lies equidistant between the lines x+2=0 and x=6.

Q.11 Find the equation of line which makes angle 15^0 with positive direction of X axis and cuts an intercept of 4 unit on negative direction of Y axis.

Q.12 Find the equation of bisectors of the angle between the coordinate axes.

Q.13 Find equation of All the Lines which cuts off intercept 2 units and are equally inclined to the axes.

Q.14 a)A line passing through point A(3,0) makes 30^0 with positive direction of X-axis. If the line is rotated through an angle of 15^0 in clockwise direction. Find the equation of line in new position.

b) If a line joining the points A(2,0) and B(3,1) is rotated about A in anticlockwise direction through an angle of 15^0. Find equation of the line in new position.

Q.15 Find the equation of the lines which pass through the origin and trisect the intercept of line 3x+4y=12 between the axes.

Q.16 Find the equation of lines which passes through (22,-6) and is such that intercept on X-axis exceeds the Y-intercept by 5.

Q.17 Find the equation of line in 1^{st} quadrant whose distance from origin is 5 and slope of its perpendicular from origin is 3/4.

Q.18 Find equation of a line on which perpendicular from origin makes an angle of 30^0 with X-axis and which forms a triangle of area $50\sqrt{3}$ with axes.

Q.19 Find the distance of point (2,5) from the line 3x+y+4=0 measured parallel to the line whose slope is 3/4.

Q.20 Two vertices of a triangle are (3,-1) and (-2,3) and its orthocenter is at origin. Find the coordinate of its third vertex.

Q.21 Find the equation of line parallel to 2x+3y+11=0 and whose sum of intercepts on the axes is 15.

Q.22 a) Find image of the point (2,1) with respect to the line mirror x+y-5=0.
b) If image of the point (2,1) with respect to a line mirror is (5,2). Find the equation of line mirror.

Q.23 Hypotenuse of a right isosceles triangle has its ends at points (1,3) and (-4,1). Find the equation of other two sides.

Q.24 Equation of the base of an equilateral triangle is x+y-2=0 and opposite vertex has coordinates (2,-1) Find area of that triangle.

Q.25 Prove that the length of perpendiculars from the point P(m^2,2m) Q(mn,m+n) and R(n^2,2n) to the line $x\cos^2\theta+y\sin\theta.\cos\theta+\sin^2\theta=0$ are in G.P.

Q.26 Two sides of a square are x+y+2=0 and x+y-1=0. Find its area.

Q.27Find the equation of lines which are parallel to x+7y+2=0 and at unit distance from point (1,-1).

Q.28 A vertex of an equilateral triangle is (2,3) and opposite side is x+y=2. Find the equation of other two sides.

Q.29 One side of a rectangle is 4x+7y+5=0. Two of its vertices are (-3,,1) and (1,1). Find the equation of other two sides.

Q.30 Find Centroid, Incentre, Circumcentre and Orthocentre of a triangle whose sides are 3x-4y=0 , 12y+5x=0 and y-15=0.

NOTE: a) Orthocentre(O), Centroid(M) of a trian, and Circumcentre(C) of a triangle are always collinear.

b) Centroid divides the line joining Orthocentre and Circumcentre in 2:1 i.e OM:MC=2:1.

!!..ANSWERS..!!

Q.1) 23x-7y-9=0 and 7x+23y-53=0 Q.2) 3x-4y+6=0 and 4x-3y+1=0 Q.3) $\sqrt{3x}-y-\sqrt{3}=0 \quad and \quad \sqrt{3x}+y-\sqrt{3}=0$ Q.4) line makes either 75^0 or 15^0 with +ve X axis. Q.5) a) 1 and -1 b) 3:7 Q.6) (6,3) and (0,7) Q.9) A(1,-4) B(3,2) C(-1,2) and 1:4 Q.10) a) y=4 b) x=2 Q.11) $(2-\sqrt{3})x-y-4=0$
Q.12) x-y=0 and x+y=0 Q.13) x+y=2 x-y=2 -x-y=2 -x+y=2 Q.14) a) $(2-\sqrt{3})x-y-3(2-\sqrt{3})=0$
b) $y-\sqrt{3}\,x+2\sqrt{3}=0$
Q.15) 3x-2y=0 and 3x-8y=0 Q.16) 6x+11y-66=0 and x+2y-10=0 Q.17) 4x+3y-25=0
Q.18) $\sqrt{3x}+y=10 \; and \; \sqrt{3x}+y=-10$ Q.19) 5 units Q.20)(-36/7,-45/7)
Q.21) 2x+3y-18=0 Q.22) a) (4,3) b) 3x+y-12=0 Q.23) 7x-3y+31=0 and 3x+7y-24=0 Q.24) $\frac{\sqrt{3}}{6}\,sq.units$ Q.26) 9/2 sq. units Q.27) x+7y+6-5$\sqrt{2}=0$ and x+7y+6+5$\sqrt{2}=0$ Q.28) $(2+\sqrt{3})x-y=1+2\sqrt{3} \quad and \quad (2-\sqrt{3})x-y=1-2\sqrt{3}$ Q .29) 4x+7y-11=0 7x-4y+25=0 and 7x-4y-3=0 Q.30) Centroid (-16/3,10) Incentre (-1,8) Circumcentre (-8,63/2) Orthocentre (0,-33).

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