## 

## Chapter: - Straight Lines and Conic Sections

Q1.What point on $x$-axis is equidistant from the points $\mathrm{A}(1,3)$ and $\mathrm{B}(2,-5)$
Ans. (19/2, 0)
Q2. If the points $(a, 0),(0, b)$ and $(1,1)$ are collinear, show that $\frac{1}{a}+\frac{1}{b}=1$
Q3. For what values of $x$, the area of the triangle formed the points $(5,-1),(x, 4)$ and $(6,3)$ is 5.5 sq. units?
Ans. 7/2 or 9
Q4. A line cut off intercepts -3 and 4 on $x$ and $y$-axis respectively. Find the slope and equation of the line.
Ans. $4 / 3,4 x-3 y+12=0$
Q5. Find the equation of a line parallel to $x$-axis at a distance of 3 units above $x$-axis. Ans. $y=3$
Q6. Find the value of $c$ and $m$ so that the line $y=m x+c$ may pass through the points $(-2,3)$ and $(4,-3)$
Ans. $c=1, m=-1$
Q7. Mid-points of the sides of a triangle are $(2,2),(2,3)$ and $(4,6)$. Find the equations of the sides of a triangle. Ans. $3 x-2 y=2,2 x-y=1, x=4$

Q8. Find the equations of the medians of the triangle whose vertices are $(2,0),(0,2)$ and $(4,6)$.
Ans. $x=2,5 x-3 y=2, x-3 y+6=0$
Q9. Show that the points $(a, 0)(0, b)$ and $(3 a,-2 b)$ are collinear Also find the equation of the line containing them. Ans. $b x+a y=a b$

Q10.Find the new coordinates of the point $(3,-5)$ if origin is shifted to the point $(2,3)$ by a transformation of axes. Ans. $(1,-8)$

Q11. Find the equation of the line such that segment intercepted by the axes is divided by the points ( -5 , $4)$ in the ratio 1:2. Ans. $8 x-5 y+60=0$

Q12. Find the equations of lines which cut off intercepts on the axes whose sum and product are 1 and- 6 respectively. Ans. $2 x-3 y=6,3 x-2 y+6=0$

Q13.Find the angle between the lines joining the points $(3,-1)$ and $(2,3)$ and the points $(5,2)$ and $(9,3)$ Ans. $90^{0}$

Q14. Find the angle between the lines whose equations are $a x+b y+c=0$ and $(a+b) x=(a-b) y$ Ans. $45^{0}$

Q15. Find the equation of a line which passes through origin and making an angle $60^{\circ}$ with the line $x+\sqrt{3} v$ $+5=0$ Ans. $x=0, \quad x=\sqrt{3} y$

Q16. Find the equation of a line that passes through the intersection of $4 x+3 y=6$, and $3 x+4 y=8$ and whose slope is 1 . Ans. $x-y+2=0$

Q17. Find the equation of the line passing through the midpoint of the line segment joining the point (1, 3 ) and $(2,-1)$ and parallel to the line $3 x-y=7$

Ans. $6 x-2 y=7$,
Q18. Find the equation of the line passing through the midpoint of the line segment joining the point ( 3 , $4)$ and $(5,-2)$ and perpendicular to the line $x+3 y=8 \quad$ Ans. $3 x-y=11$,

Q19. Find the equation of the line perpendicular to the line $3 x-y=5$ and at a distance of 4 units from the origin. Ans. $x+3 y \pm 4 \sqrt{10}=0$
P.T.O.

Ans. $X^{2}-3 Y^{2}+X Y+3 X-6 Y=0$

Q21. Find the equations of the medians of the triangle $A B C$ whose vertices are $A(2,5), B(-4,9)$ and $C(-2,-$

1) Ans. $8 x-y+15=0, x-5 y+23=0,7 x+4 y-8=0$

Q22. Find the image of the point $(-8,12)$ with respect to the line mirror $4 x+7 y+13=0$. Ans. $(-16,-2)$
Q23 Find the equation of the line passing through the intersection of the lines $3 x-4 y+1=0$ and $5 x+y-1=0$ and cutting off equal intercepts on the coordinate axes. Ans. $23 x+23 y=11$

Q24. Find the coordinates of the foot of the perpendicular from a point $(-1,3)$ to the line $3 x-4 y=16$
Ans. 68/25,-49/25)
Q25. Find the equation of the line parallel to $y$ - axis and drawn through the point of intersection of $x$ $7 y+5=0$ and $3 x+7 y=7 \quad$ Ans. $x=1 / 2$

Q26. Find the equation of parabola with focus at $(5,0)$ and directrix $x+5=0$, Also find the length of latus rectum. Ans. $\mathrm{y}^{2}=20 \mathrm{x}, 20$

Q27. For the parabola $y^{2}=-12 x$, Find the coordinates of focus, the equation of directrix and length of latus rectum. Ans. $(-3,0), x=3,12$

Q28. Find the equation of parabola with vertex at origin and having directrix $y=2$ Ans. $x^{2}=-8 y$
Q29. Find the equation of the circle which passes through the points $(5,-8),(2,-9)$ and $(2,1)$. Find also the coordinate of its centre and radius. Ans. $x^{2}+y^{2}-4 x+8 y-5=0,(2,-4), 5$,

Q30. Find the equation of the circle which passes through the points $(-2,-3)$ and has its centre on negative side of $x$-axis and is of radius 5 units. Ans. $x^{2}+y^{2}+12 x+11=0$,

Q31. Find the equation of the circle whose centre is $(3,-2)$ and which passes through the intersection of the line $5 x+7 y=3$ and $2 x-3 y=7$, Ans. $x^{2}+y^{2}-6 x+4 y+11=0$,

Q32. Find the equation of the circle which passes through the points $(3,-2),(-2,0)$ and having the line segment $2 x-y=3$ as its diameter. Ans. $x^{2}+y^{2}+3 x+12 y+2=0$,

Q33. Find the equation of the circle which passes through the points $(-3,1),(6,4)$ and $(2,-6)$.
Ans. $13 x^{2}+13 y^{2}-64 x+10 y-332=0$,
Q34. Find the coordinate of the foci, the vertices, the eccentricity, the length of the latus rectum, the axis of the hyperbola $y^{2}-16 x^{2}=16$, Ans. $(0, \pm \sqrt{17}),(0, \pm 4), \frac{\sqrt{17}}{4}, 1 / 2,8,2$,

Q35. Find the equation of the hyperbola whose vertices are $( \pm 5,0)$ and foci $( \pm 7,0) \quad$ Ans. $\frac{x^{2}}{25}-\frac{y^{2}}{24}=1$
Q36. If the major axis and eccentricity of an ellipse are respectively 8 and $1 / 2$, then find equation of the ellipse Ans. $3 x^{2}+4 y^{2}=48$

Q37. Find the coordinate of the foci, the vertices, the eccentricity, the length of the latus rectum, the major axis and the minor axis of the ellipse $\frac{x^{2}}{169}+\frac{y^{2}}{144}=1$, Ans. $( \pm 5,0),( \pm 13,0), 5 / 13,288 / 13,26$

Q38.Find the point to which the origin should be shifted after shifting of origin so that the equation $x^{2}$ $12 x+4=0$ will have no first degree term. Ans. $(6, k)$ where $k$ is real value.

Q39. Prove that the area of a triangle is invariant under the translation of the axes.

