OPG'S

Practice Problem Series

Based on Coordinate Geometry

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Q01. What does the equation $x^2+y^2-6x+8y+25=0$ represent? Explain.

Q02. Find radius of a circle which passes through (6, 2), and two of whose diameters are lying on the lines $x+y=6$ and $x+2y=4$.

Q03. Write radius of circle $4x^2+4y^2-10x+5y+5=0$.

Q04. The line $x+3y=0$ is a diameter of the circle $x^2+y^2-6x+2y=0$. True or False?

Q05. The circle $x^2+y^2-6x+2y=0$ passes through the origin. Give the equation of one of its diameter.

Q06. What is the area of the circle which is centred at (1, 2) and is passing through (4, 6)?

Q07. Locate the centre of $(x-a)(x-c)+(y-b)(y-d)=0$.

Q08. Write the centre of a circle passing through the points $(0,0)$, $(a,0)$ and $(0,b)$.

Q09. If the equation $ax^2+by^2+2hxy+2gx+2fy+c=0$ represents circle, write the condition(s) on a, b, c, f, g and h.

Q10. The lines $2x-3y=5$ and $3x-4y=7$ are diameters of a circle of area 154sq.units. Write the equation of this circle.

Q11. The point (1, 2) lies inside the circle given as $x^2+y^2-2x+6y+1=0$. True/ false?

Q12. What is the length of a chord lying along the line $3x+4y=15$ for the circle $x^2+y^2=36$?

Q13. Write the equation of a line passing through (1,–2) and which cuts off equal intercepts from the axes.

Q14. Determine the angle between lines $2x+3=0$ & $3y-5=0$.

Q15. For what value of a the lines $3x-4y+7=0$ and $ax+6y+1=0$ are perpendicular?

Q16. Locate the image of (–1, 3) on the line $x=y$.

Q17. Image of (4,–6) by a line mirror is (2, 1) then, find the equation of this line mirror.

Q18. Write the equation of a straight line which is passing through the intersection of $3y=x+1$ and $2x+5y=9$ and having infinite slope.

Q19. The straight line $5x+4y=0$ passes through the point of intersection of the straight lines given by $2x+y+5=0$ and $x+2y=10$. True/ False?

Q20. Name the type of triangle formed by lines $y+x=0$, $3x+y=4$ and $x+3y=4$.

Q21. If the lines $3y+4x=1$, $y=x+5$ and $5y+bx=3$ are concurrent, then find the value of b.

Q22. Write the area enclosed by $|x|+|y|=1$.

Q23. What is the length of $\perp^{er}$ drawn from (1, 2) upon the straight line $3x-4y+15=0$?

Q24. What will be the distance between the two lines $3x+4y=6$ and $6x+8y=15$?

Q25. Write the locus of the mid-point of the portion which Is intercepted between the axes by $x\cos\alpha+y\sin\alpha=p$, where p is a constant.

Q26. If the straight line $6x-y+2+k(2x+3y+13)=0$ is parallel to x-axis, find the value of k.

Q27. Write all the points on the line $2x+5y+4=0$ that lie at unit distance from the straight line $12x+5y=13$.

Q28. Write the coordinates of foot of $\perp^{er}$ from the point $(2,4)$ on the straight line $x+y=1$.

Q29. The distance between the foci of an ellipse is known to be 10units and its latus-rectum is 15. Find equation of such an ellipse.

Q30. Find the equation of an ellipse in the standard form whose minor axis is equal to the distance between the foci and whose latus-rectum is 10.

Q31. The value of *e* for an ellipse is ½ and the distance between its foci is 4units. Find is equation.

Q32. Find the equation to the ellipse whose foci are $(4,0)$ and $(-4,0)$ having eccentricity as 1/3.

Q33. Write the equation of an ellipse, referred to its axes as *x*, *y* axes respectively, which passes through the point $(-3,1)$ and has the eccentricity $\sqrt{2/3}$.

Q34. Find the eccentricity of an ellipse if its latus-rectum is half of its major axis.

Q35. Find the eccentricity of an ellipse if its latus-rectum is one-third of its major axis.

Q36. Determine the equation of a hyperbola whose conjugate axis is 5 and the distance between the foci is 13 units.

Q37. Determine the equation of the hyperbola if the distance between the foci is 9 units and eccentricity is $\sqrt{3}$.

Q38. The coordinates of the foci of a hyperbola are given as $(\pm 6,0)$ and it is also provided that the latus-rectum is of length 10units. Find its equation.

Q39. Find the equation to the hyperbola referred to its axes as co-ordinate axes whose conjugate axis is 7 and passes through the point $(3,-2)$.

Q40. Find the locus of a point which moves in such a way that the difference of its distances from the points $(-5,0)$ and $(5,0)$ is equal to 8.

Q41. Find the equation of a hyperbola whose foci are at $(0,\pm\sqrt{10})$ and which passes through $(2,3)$.

Q42. Write the equation of a hyperbola, the length of whose latus-rectum is found to be 8units and eccentricity is $\frac{3}{\sqrt{5}}$.

Q43. If the parabola $y^2 = 4ax$ passes through $(3,\ 2)$ then, write its length of latus-rectum.

Q44. The end points of the latus-rectum of a parabola are $(7,\pm 5)$. Write its equation.

Q45. Check if the point whose coordinates are given by $(b\cos\alpha,\ a\sin\alpha)$ lie on $\frac{x^2}{b^2}+\frac{y^2}{a^2}=1$?

❖ ANSWERS ❖

Q01. A point circle centered at (3,–4) Q02. $2\sqrt{5}$ units Q03. $\frac{3\sqrt{5}}{8}$ units

Q04. True Q05. $x+3y=0$ Q06. 25π Sq.units Q07. $\left(\frac{a+c}{2},\frac{b+d}{2}\right)$

Q08. $\left(\frac{a}{2},\frac{b}{2}\right)$ Q09. $a=b;h=0;a,b,g,f,c\in \mathrm{R}$ Q10. $x^2+y^2-2x+2y-47=0$

Q11. False Q12. $6\sqrt{3}$ units Q13. $x-y-3=0, x+y+1=0$

Q14. $\frac{\pi}{2}$ Q15. 8 Q16. (3,–1) Q17. $4x-14y=47$

Q18. $x=2$ Q19. True Q20. Isosceles triangle Q21. 6

Q22. 2 Sq.units Q23. 2 units Q24. $\frac{3}{10}$ units

Q25. $x^2+y^2=p^2\mathrm{cosec}^2\alpha$, A circle of radius $p\,\mathrm{cosec}\,\alpha$ and centered at (0,0)

Q26. –3 Q27. $(3,-2),\left(\frac{2}{5},-\frac{24}{25}\right)$ Q28. $\left(-\frac{1}{2},\frac{3}{2}\right)$

Q29. $\frac{x^2}{100}+\frac{y^2}{75}=1$ Q30. $x^2+2y^2=100$ Q31. $\frac{x^2}{16}+\frac{y^2}{12}=1$ Q32. $\frac{x^2}{144}+\frac{y^2}{128}=1$

Q33. $x^2+3y^2=12$ Q34. $\frac{1}{\sqrt{2}}$ Q35. $\sqrt{\frac{2}{3}}$ Q36. $\frac{x^2}{144}-\frac{y^2}{25}=\frac{1}{4}$

Q37. $4x^2-2y^2=27$ Q38. $\frac{x^2}{16}-\frac{y^2}{20}=1$ Q39. $65x^2-36y^2=441$ Q40. $\frac{x^2}{16}-\frac{y^2}{9}=1$

Q41. $y^2-x^2=5$ Q42. $4x^2-5y^2=100$ Q43. $\frac{4}{3}$ units Q44. Self

Q45. Yes the point lies on the given curve.