Class 11 Mathematics · Chapter 10: Conic Sections

Worksheet · 20 marks · about 40 minutes · based on NCERT

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1. Which of the following parabolas has its focus on the negative y-axis? [1]

(a) $y^2 = -6x$ (b) $x^2 = 6y$

(c) $x^2 = -6y$ (d) $y^2 = 6x$

2. The equation $x^2 + y^2 + 2gx + 2fy + c = 0$ represents a circle that passes through the origin exactly when [1]

(a) $g = 0$ (b) $g = f$

(c) $c = 0$ (d) $g^2 + f^2 = c$

3. The point $(1, k)$ lies inside the circle $x^2 + y^2 = 10$ exactly when [1]

(a) $-3 < k < 3$ (b) $k < 3$

(c) $k = \pm 3$ (d) $-9 < k < 9$

4. The latus rectum of a parabola with vertex at the origin has end points $(-4, 8)$ and $(-4, -8)$. The equation of the parabola is [1]

(a) $y^2 = 16x$ (b) $y^2 = -16x$

(c) $x^2 = -16y$ (d) $y^2 = -8x$

5. A plane passes through the vertex of a double-napped cone and contains one of its generators, so that $\beta = \alpha$. The section is [1]

(a) a point (b) a pair of intersecting straight lines

(c) a circle (d) a straight line

6. Find the points of the parabola $x^2 = 8y$ whose distance from the focus is 10 units. [2]

7. The eccentricity of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ $(a > b)$ is $\frac{1}{2}$ and its minor axis is $6\sqrt{3}$ units long. Find a and write the equation of the ellipse. [2]

8. Show that the equation $x^2 + y^2 + 4x - 6y + 15 = 0$ does not represent a circle. [2]

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9. A point P moves so that the difference of its distances from A(0, −3) and B(0, 3) is always 4. Show, from this condition, that the locus of P is a hyperbola, and write its equation in standard form. [3]

10. A(−1, 2) and B(5, −6) are the ends of a diameter of a circle. Find the equation of the circle, and decide whether the point (6, 1) lies inside, on or outside it. [3]

11. The triangle formed by the vertex of the parabola $y^2 = 4ax$ ($a > 0$) and the two ends of its latus rectum has area 50 square units. Find the equation of the parabola and of its directrix. [3]