

Conic Section

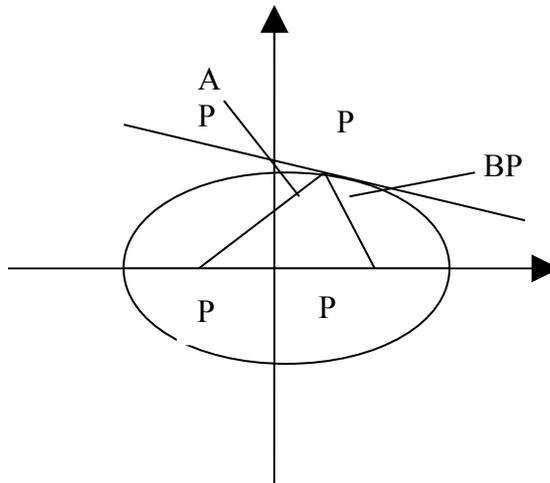
1. Find the focus and the directrix of the parabola $y^2 + 12x = 0$ and sketch the graph.
2. Sketch the graph of $9x^2 + 16y^2 = 144$ and locate the foci.
3. Find the equation of an ellipse with foci $(0, \pm 3)$ and vertices $(0, \pm 3)$.
4. Find the equation of an ellipse with foci $(2, -2)$ and $(4, -2)$ and vertices $(1, -2)$ and $(5, -2)$.
5. Sketch the conic $9x^2 - 4y^2 - 72x + 8y + 176 = 0$ and find its foci.
6. Find the vertex, focus and directrix of the parabola and sketch it

i) $x = 2y^2$ ii) $5y + x^2 = 0$ iii) $4x^2 = -y$ iv) $y^2 = 12x$ v) $y^2 + 2y + 12x + 25 = 0$

7. Determine the type of the curve represented by $\frac{x^2}{k} + \frac{y^2}{k-16} = 1$ when $k > 16$

$0 < k < 16$ and $k < 0$.

8. Let $P(x_1, y_1)$ be a point on the ellipse $x^2/a^2 + y^2/b^2 = 1$ with foci F_1 and F_2 and let A and B be the angles between the lines PF_1 and PF_2 and the ellipse as shown in the diagram. Prove that $A=B$.



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Best of luck!

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