

Section 12-2 Classifying Conic Sections and Transforming Equations

Without graphing, tell whether the graph will be a circle, an ellipse, a parabola or a hyperbola.

1. $\frac{(x+4)^2}{4} + \frac{(y-1)^2}{9} = 1$

2. $\left(\frac{x}{2}\right)^2 + \left(\frac{y}{3}\right)^2 = 1$

3. $\frac{(x+2)^2}{25} - (y-1)^2 = 1$

4. $\left(\frac{x+3}{4}\right)^2 + \left(\frac{y-1}{4}\right)^2 = 1$

5. $y = (x-5)^2 - 4$

6. $-\left(\frac{x-3}{2}\right)^2 + \left(\frac{y+1}{2}\right)^2 = 1$

General Equation of a Conic

$$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$$

Take equation of #1 $\frac{(x+4)^2}{4} + \frac{(y-1)^2}{9} = 1$ and multiply by 36

$$9(x+4)^2 + 4(y-1)^2 = 36$$

$$9(x^2 + 8x + 16) + 4(y^2 - 2y + 1) = 36$$

$$9x^2 + 72x + 144 + 4y^2 - 8y + 4 = 36$$

$$9x^2 + 4y^2 + 72x - 8y + 112 = 0 \quad \text{*notice no xy term}$$

Transform into standard form (normal looking form).

7. $x^2 + y^2 + 6x - 2y - 6 = 0$

Transform.

8. $x^2 - 25y^2 + 4x + 50y - 46 = 0$

9. $-x^2 + 10x + y - 21 = 0$