

Examples: Classify as a parabola, circle, ellipse, or hyperbola.

1) $x^2 + y^2 - 6x + 4y + 9 = 0$ Circle

2) $x^2 + 4y^2 - 6x + 16y + 21 = 0$ Ellipse

3) $4x^2 - y^2 - 4x - 3 = 0$ Hyperbola

4) $y^2 - 4y - 4x = 0$ Parabola

5) $4x^2 + 3y^2 + 8x - 24y + 51 = 0$ Ellipse

6) $4y^2 - 2x^2 - 4y - 8x - 15 = 0$ Hyperbola

7) $25x^2 - 10x - 200y - 119 = 0$ Parabola

8) $4x^2 + 4y^2 - 16y + 15 = 0$ Circle

9) $4x^2 - y^2 + 8x - 6y + 4 = 0$ Hyperbola

10) $2x^2 + 2y^2 - 8x + 12y + 2 = 0$ Circle

11) $\frac{(x-2)^2}{16} + \frac{(y-2)^2}{49} = 1$ Ellipse

12) $(x-2)^2 = 4(2)(y-1)$ Parabola

13) $(x-4)^2 + (y-2)^2 = 16$ Circle

14) $\frac{(y-2)^2}{16} - \frac{(x-2)^2}{49} = 1$ Hyperbola

STANDARD FORM	Conic Section
$x^2 + y^2 + Dx + Ey + F = 0$	Circle
$Ax^2 + Cy^2 + Dx + Ey + F = 0$	Ellipse
$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$	Hyperbola

CLASSIFYING CONICS

If the graph of $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$ is a conic, then the type of conic can be determined as follows:

Label/Conic	Conic Section
x^2 and y^2 are the same and have the same sign	Circle
x^2 and y^2 are different and have the same sign	Ellipse
x^2 and y^2 are different and have opposite signs	Hyperbola