

Standard Forms of Conic Sections

Parabola

$$(y - k)^2 = 4a(x - h)$$

$$(x - h)^2 = 4a(y - k)$$

Ellipse

$$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$$

Circle

$$(x - h)^2 + (y - k)^2 = r^2$$

Hyperbola

$$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$$

$$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$$

Classify the following conic and put its equation in standard form.

$$x^2 - 12x - 4y + 20 = 0$$

Classify the following conic and put its equation in standard form.

$$x^2 + y^2 + 6x - 4y - 23 = 0$$

Classify the following conic and put its equation in standard form.

$$x^2 + 4y^2 - 2x + 24y + 1 = 0$$

Classify the following conic and put its equation in standard form.

$$4x^2 - 9y^2 - 24x - 36y - 144 = 0$$