

### Classifying a Conic from Its General Equation

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

$$\text{Circle : } A = C$$

$$\text{Parabola : } AC = 0$$

$$\text{Ellipse : } AC > 0$$

$$\text{Hyperbola : } AC < 0$$

### STANDARD FORM OF EQUATIONS OF TRANSLATED CONICS

In the following equations the point  $(h, k)$  is the *vertex* of the parabola and the *center* of the other conics.

<b>CIRCLE</b>	$(x - h)^2 + (y - k)^2 = r^2$	
	<b>Horizontal axis</b>	<b>Vertical axis</b>
<b>PARABOLA</b>	$(y - k)^2 = 4p(x - h)$	$(x - h)^2 = 4p(y - k)$
<b>ELLIPSE</b>	$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$	$\frac{(x - h)^2}{b^2} + \frac{(y - k)^2}{a^2} = 1$
<b>HYPERBOLA</b>	$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$	$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$

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