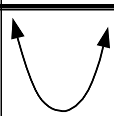
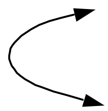
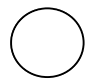
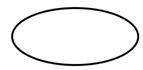
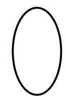
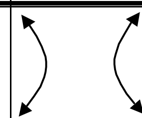
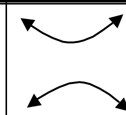
Conics Chart

Updated: January 24, 2009.

General Quadratic Equation: $\boldsymbol{Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0}$, *where A, B, and C are not all zero.*							
	Parabola	**Parabola**	**Circle**	**Ellipse**	**Ellipse**	**Hyperbola**	**Hyperbola**
							
Standard Form of Equation	$y = a(x-h)^2 + k$	$x = a(y-k)^2 + h$	$(x-h)^2 + (y-k)^2 = r^2$	$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$	$\frac{(y-k)^2}{a^2} + \frac{(x-h)^2}{b^2} = 1$	$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$	$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$
Vertices	(h, k)	(h, k)	Center: (h, k)	(h+a, k), (h–a, k)	(h, k+a), (h, k-a)	(h+a, k), (h–a, k)	(h, k+a), (h, k–a)
Foci	(h, k + 1/4a)	(h + 1/4a, k)		(h+c, k), (h-c, k)	(h, k+c), (h, k-c)	(h+c, k), (h–c, k)	(h, k+c), (h, k–c)
Directrix	y = k – (1/4a)	x = h – (1/4a)					
Axis of Symmetry	x = h	y = k					
Direction of opening	Up if a > 0 Down if a < 0	Right if a > 0 Left if a < 0					
Latus Rectum	$\lvert 1/a \rvert$	$\lvert 1/a \rvert$					
Direction of Major Axis				Horizontal	Vertical		
Length of Major Axis				2a units	2a units		
Length of Major Axis				2b units	2b units		
Direction of Transverse Axis						Horizontal	Vertical
Length of Transverse Axis						2a units	2a units
Length of Conjugate Axis						2b units	2b units
Equations of Asymptotes						$y-k = \pm \frac{b}{a}(x-h)$	$y-k = \pm \frac{a}{b}(x-h)$