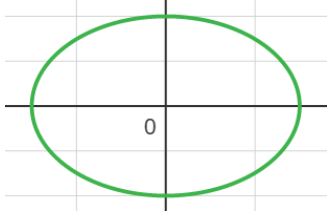
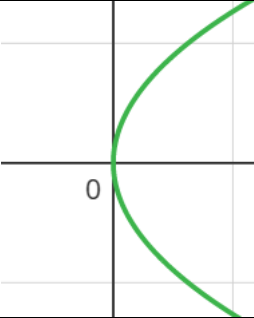
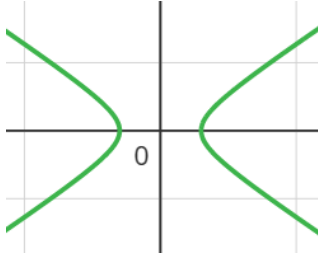


# Conic Section formulas

	Ellipse	Parabola	Hyperbola
Cartesian equation	$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1 \quad (a \geq b)$	$y^2 = 4px \quad (p > 0)$	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$
Shape			
Vertex	$(\pm a, 0)$	$(0, 0)$	$(\pm a, 0)$
Foci	$(\pm c, 0)$ where $c = \sqrt{a^2 - b^2}$	$(p, 0)$	$(\pm c, 0)$ where $c = \sqrt{a^2 + b^2}$
Eccentricity	$e = \frac{c}{a}$	$e = 1$	$e = \frac{c}{a}$
Directrices	$x = \pm d$ where $d = \frac{a^2}{c}$	$x = -d$ where $d = p$	$x = \pm d$ where $d = \frac{a^2}{c}$
Polar equation (the pole being at one of the foci)	$r = \frac{ed}{1 \pm e \cos \theta}$ ( $d$ is the distance from the pole to the directrix)		