Parabolas ($p > 0$)

equation	vertex	focus	directrix	description
$(y-k)^2 = 4p(x-h)$	(h, k)	$(h+p, k)$	$x = h - p$	opens right
$(y-k)^2 = -4p(x-h)$	(h, k)	$(h-p, k)$	$x = h + p$	opens left
$(x-h)^2 = 4p(y-k)$	(h, k)	$(h, k+p)$	$y = k - p$	opens up
$(x-h)^2 = -4p(y-k)$	(h, k)	$(h, k-p)$	$y = k + p$	opens down

Ellipses [$a^2 = b^2 + c^2$]

equation	center	foci	vertices	major axis
$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$	(h, k)	$(h \pm c, k)$	$(h \pm a, k)$	parallel to x-axis
$\frac{(x-h)^2}{b^2} + \frac{(y-k)^2}{a^2} = 1$	(h, k)	$(h, k \pm c)$	$(h, k \pm a)$	parallel to y-axis

Hyperbola [$c^2 = a^2 + b^2$]

equation	center	foci	vertices	transverse axis
$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$	(h, k)	$(h \pm c, k)$	$(h \pm a, k)$	parallel to x-axis
$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$	(h, k)	$(h, k \pm c)$	$(h, k \pm a)$	parallel to y-axis