Concepts and Formulas

Conic Section

Important Formulas for Conics

Circle	Parabola		Hyperbola
Contor: (b la)	Vertex : (<i>h</i> , <i>k</i>)	Center: (h, k)	Center: (h, k)
(n, n)		a > b	a^2 before negative sign
$(x-h)^{2} + (y-k)^{2}$ $= r^{2}$ Point(h, k) is center of circle	$x = \frac{1}{4p}(y-k)^{2} + h$ or $x - h = \frac{1}{4p}(y-k)^{2}$ or $4p(x-h) = (y-k)^{2}$ D: $(x = y)$ p p	$\frac{(x-h)^{2}}{a^{2}} + \frac{(y-k)^{2}}{b^{2}} = 1$ Co-V Foci	$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$ Asymptotes: $y-k = \pm \frac{b}{a}(x-h)$ Foci
	Example has positive coefficient		
No Change	or	V	$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$ Asymptotes: $y-k = \pm \frac{a}{b}(x-h)$
	Circle Center: (h, k) $(x-h)^{2} + (y-k)^{2} = r^{2}$ Point (h, k) is center of circle Cor	Center: (h, k) Vertex: (h, k) $x = \frac{1}{4p}(y-k)^2 + h$ or $x - h = \frac{1}{4p}(y-k)^2$ or $= r^2$ Point (h, k) is center of circle D: $(x = 1)$ p Example has positive coefficient $y = \frac{1}{4p}(x-h)^2 + k$ or $y - k = \frac{1}{4p}(x-h)^2$ No Change No Change Parabola Vertex: (h, k) $x = \frac{1}{4p}(y-k)^2 + h$ or $y - k = \frac{1}{4p}(x-h)^2 + k$ or $y - k = \frac{1}{4p}(x-h)^2$ Example has positive	Circle Center: (h, k) Vertex: (h, k) Ellipse Center: (h, k) $a > b$ $ x = \frac{1}{4p}(y-k)^2 + h $ or $ x - h = \frac{1}{4p}(y-k)^2 $ or $ x - h = (y-k)^2 $ Point (h, k) is center of circle $ D: (x =) $ Example has positive coefficient $ y = \frac{1}{4p}(x-h)^2 + k $ or $ y - k = \frac{1}{4p}(x-h)^2 + k $ or $ y - k = \frac{1}{4p}(x-h)^2 + k $ or $ y - k = (x-h)^2 + (x-h)^2 + k $ or