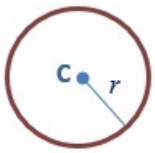
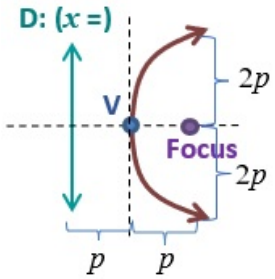
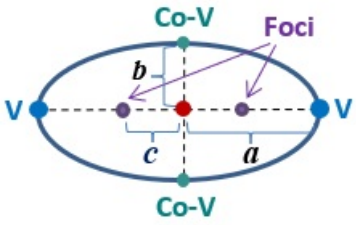
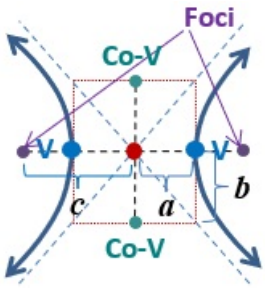
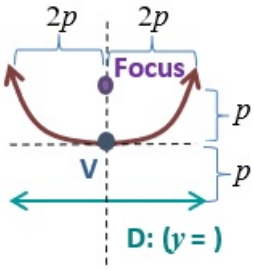
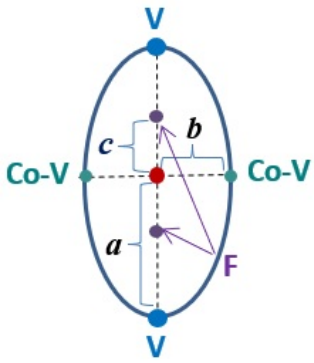
Concepts and Formulas

Conic Section

Important Formulas for Conics

CONIC	Circle Center: (h, k)	Parabola Vertex: (h, k)	Ellipse Center: (h, k) $a > b$	Hyperbola Center: (h, k) a^2 before negative sign
HORIZONTAL	$(x-h)^2 + (y-k)^2 = r^2$ 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 $4p(x-h) = (y-k)^2$  Example has **positive** coefficient	$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$ 	$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$ **Asymptotes**: $y - k = \pm\frac{b}{a}(x-h)$ 
VERTICAL	No Change	$y = \frac{1}{4p}(x-h)^2 + k$ or $y - k = \frac{1}{4p}(x-h)^2$ or $4p(y-k) = (x-h)^2$  Example has **positive** coefficient	$\frac{(y-k)^2}{a^2} + \frac{(x-h)^2}{b^2} = 1$ 	$\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$ **Asymptotes**: $y - k = \pm\frac{a}{b}(x-h)$