

THE CIRCLE			
STANDARD FORM		GENERAL FORM	
$(x - h)^2 + (y - k)^2 = r^2$		$x^2 + y^2 + Dx + Ey + F = 0$	
<u>Center:</u> (h, k)	<u>Radius:</u> r	Complete the square to get Standard Form	

THE PARABOLA			
GENERAL FORM			
$x^2 + Dx + Ey + F = 0$		$y^2 + Dx + Ey + F = 0$	
Complete the square to get Standard Form			
STANDARD FORM			
$(x - h)^2 = 4p(y - k)$		$(y - k)^2 = 4p(x - h)$	
<u>Vertex:</u> (h, k)	<u>Opening:</u>	<u>Vertex:</u> (h, k)	<u>Opening:</u>
<u>Focus:</u> $(h, k + p)$	UP if p is positive DOWN if p is negative	<u>Focus:</u> $(h + p, k)$	RIGHT if p is positive LEFT if p is negative
<u>Directrix:</u> $y = k - p$		<u>Directrix:</u> $x = h - p$	

THE ELLIPSE			
GENERAL FORM			
$Ax^2 + Cy^2 + Dx + Ey + F = 0$ where $A \neq C$			
Complete the square to get Standard Form (<u>NOTE:</u> Make sure to factor first!)			
STANDARD FORM			
$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$		$\frac{(x - h)^2}{b^2} + \frac{(y - k)^2}{a^2} = 1$	
<u>Major Axis:</u> $2a$	<u>Foci:</u> $\pm c$	<u>Major Axis:</u> $2a$	<u>Foci:</u> $\pm c$
<u>Minor Axis:</u> $2b$	$c^2 = a^2 - b^2$ $a^2 > b^2$	<u>Minor Axis:</u> $2b$	$c^2 = a^2 - b^2$ $a^2 > b^2$

THE HYPERBOLA			
GENERAL FORM			
$Ax^2 - Cy^2 + Dx + Ey + F = 0$ where $A \neq C$		$Ay^2 - Cx^2 + Dx + Ey + F = 0$ where $A \neq C$	
Complete the square to get Standard Form (<u>NOTE:</u> Make sure to factor first!)			
STANDARD FORM			
$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$		$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$	
<u>Asymptotes:</u>	$y - k = \pm \frac{b}{a}(x - h)$	<u>Asymptotes:</u>	$y - k = \pm \frac{a}{b}(x - h)$
<u>Transverse Axis:</u> $2a$	<u>Foci:</u> c	<u>Transverse Axis:</u> $2a$	<u>Foci:</u> c
<u>Conjugate Axis:</u> $2b$	$c^2 = a^2 + b^2$	<u>Conjugate Axis:</u> $2b$	$c^2 = a^2 + b^2$
a^2 is not necessarily larger than b^2		a^2 is not necessarily larger than b^2	

