Accelerated Precalculus - McGlone
Chapter 10 Review

THE CIRCLE

STANDARD FORM		GENERAL FORM
$(x-h)^2+(y-k)^2=r^2$		$Ax^2+By^2+Dx+Ey+F=0,\quad A=B$
Center: (h,k)	Radius: 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

$(x-h)^2=\pm 4p(y-k)$		$(y-k)^2=4p(x-h)$	
Vertex: (h,k)	Opening:	Vertex: (h,k)	Opening:
Focus: $(h,k+p)$	UP if positive on right DOWN if negative on right	Focus: $(h+p,k)$	RIGHT if positive on right LEFT if negative on right
Directrix: $y=k-p$		Directrix: $x=h-p$	

THE ELLIPSE

GENERAL FORM

$Ax^2+Cy^2+Dx+Ey+F=0$ where $A\neq C$

Complete the square to get Standard Form (NOTE: Make sure to factor first!)

STANDARD FORM

$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$		$\frac{(x-h)^2}{b^2}+\frac{(y-k)^2}{a^2}=1$	
Major Axis: $2a$; horizontal	Foci: $\pm c$	Major Axis: $2a$; vertical	Foci: $\pm c$
Minor Axis: $2b$	$c^2=a^2-b^2$ $a^2>b^2$	Minor Axis: $2b$	$c^2=a^2-b^2$ $a^2>b^2$

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 (NOTE: Make sure to factor first!)			

STANDARD FORM

$\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$		$\frac{(y-k)^2}{a^2}-\frac{(x-h)^2}{b^2}=1$	
Asymptotes:	$y-k=\pm\frac{b}{a}(x-h)$	Asymptotes:	$y-k=\pm\frac{a}{b}(x-h)$
Transverse Axis: $2a$	Foci: c	Transverse Axis: $2a$	Foci: c
Conjugate Axis: $2b$	$c^2=a^2+b^2$	Conjugate Axis: $2b$	$c^2=a^2+b^2$
Left/Right Hyperbola; a^2 is not necessarily larger than b^2		Up/Down Hyperbola; a^2 is not necessarily larger than b^2	