9 CHAPTER SUMMARY

BIG IDEAS

For Your Notebook

Big Idea 1

TEKS 2A.5.B

Writing Equations of Conic Sections

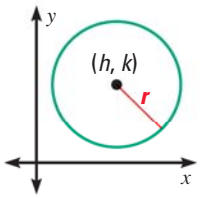
Conic	Equation	Key facts		
Circle	$x^2 + y^2 = r^2$	radius r		
Parabola	$x^2 = 4py$	*Axis of symmetry* vertical	*Focus* $(0, p)$	*Directrix* $y = -p$
	$y^2 = 4px$	*Axis of symmetry* horizontal	*Focus* $(p, 0)$	*Directrix* $x = -p$
Ellipse	$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	*Major axis* horizontal	*Vertices* $(\pm a, 0)$	*Co-vertices* $(0, \pm b)$
	$\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$	*Major axis* vertical	*Vertices* $(0, \pm a)$	*Co-vertices* $(\pm b, 0)$
Hyperbola	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	*Transverse axis* horizontal	*Asymptotes* $y = \pm\frac{b}{a}x$	*Vertices* $(\pm a, 0)$
	$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$	*Transverse axis* vertical	*Asymptotes* $y = \pm\frac{a}{b}x$	*Vertices* $(0, \pm a)$

Big Idea 2

TEKS 2A.5.B

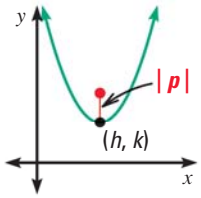
Graphing Equations of Conic Sections

Circle



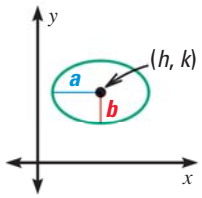
$(x - h)^2 + (y - k)^2 = r^2$

Parabola



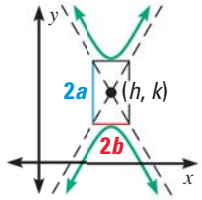
$(x - h)^2 = 4p(y - k)$

Ellipse



$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$

Hyperbola



$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$

Big Idea 3

TEKS 2A.3.B

Solving Quadratic Systems

Method	Description	When to use
Graphing	Graph the equations. Identify any points of intersection.	When graphing is easy or when using a graphing calculator
Substitution	Solve one equation for one of the variables and substitute it into the other equation.	When you can easily solve for one variable (or its square) in terms of the other variable
Elimination	Multiply one or both equations by a constant as needed, and add.	When you can eliminate one or more of the variable terms