Algebra 2

Write your questions and thoughts here!

11.4 Classify Conics

Name:_____

Standard Form Equations of Conics

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

	Horizontal Axis (left/right)	Vertical Axis
Parabola	$(y-k)^2=4p(x-h)$	$(x-h)^2=4p(y-k)$
Ellipse	$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$	$\frac{(x-h)^2}{b^2}+\frac{(y-k)^2}{a^2}=1$
Hyperbola	$\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$	$\frac{(y-k)^2}{a^2}-\frac{(x-h)^2}{b^2}=1$

(h,k) is the vertex for a parabola, and the center for the other conics.

RECALL: Completing the Square

$$x^2+\quad x+\quad =\left(x+\quad\right)^2$$

Complete the square of each binomial, then write it as a "binomial squared".

1. x^2+10x+ _____

2. $4x^2+16x+$ _____

3. $3x^2-15x+$ _____

11.4 Classify Conics

Write your questions and thoughts here!

Write the equation in standard form, then classify each conic section.

4. $x^2 - 9y^2 - 4x - 54y - 86 = 0$

5. $x^2 - 6x + 4y + 33 = 0$

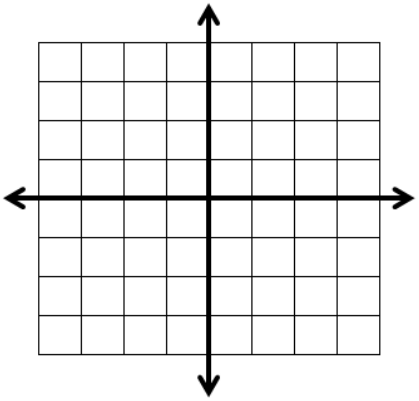
6. $4x^2 + 9y^2 + 8x - 90y + 183 = -10$

7. $x^2 + y^2 + 4y - 2 = 10$

Now summarize what you learned!

Algebra Skillz:

1. Graph $f(x) = -\sqrt{x-2} + 3$



Multiply.

2. $(4 - \sqrt{3})(4 + \sqrt{3})$

3. $(\sqrt{x} - 2)(\sqrt{x} + 3)$

Solve by factoring.

4. $4x^3 - 16x = 0$

5. $14x^2 - x - 4 = 0$

Algebra 2 Name_____

11.4 Practice - Classify Conics

Period____

Classify each conic section and write its equation in standard form.

1) $-2x^2 - 24x + y - 67 = 0$

2) $x^2 - y^2 - 6x + 8 = 0$

3) $x^2 + y^2 - 8x - 2y + 15 = 0$

4) $4x^2 + 9y^2 + 8x - 36y - 104 = 0$

5) $2y^2 + x + 12y + 20 = 0$

6) $9x^2 + 16y^2 + 36x - 96y + 36 = 0$

7) $-x^2 + 4y^2 - 2x - 24y + 19 = 0$

8) $4x^2 + 4y^2 + 20x + 24y + 45 = 0$

9) $2x^2 + 2y^2 + 14x + 10y + 33 = 0$

10) $x^2 - y^2 + 4x - 2y - 1 = 0$

11) $9x^2 - 16y^2 + 32y - 160 = 0$

12) $16x^2 + 9y^2 - 128x + 54y + 193 = 0$

13) $x^2 + 10x + 4y + 41 = 0$

14) $3y^2 + x + 12y + 18 = 0$

15) $-4x^2 + y^2 + 24x + 2y - 51 = 0$

16) $x^2 + y^2 - 4y - 12 = 0$

17) $2x^2 - 4x + y + 5 = 0$

18) $x^2 + 49y^2 - 294y + 392 = 0$

11.4 Application and Extension

1. Whisper Dishes are two parabolic dishes set up facing directly toward each other. A person listening at the focus of one dish is able to hear even the softest sound made at the focus of the other dish. Two dishes are positioned so that their vertices are 50 feet apart. The focus of each dish is 3 feet from its vertex. Write equations for the cross sections of the dishes so that the vertex of one dish is at the origin and the vertex of the other dish is on the positive x-axis. Write the equation of each under their corresponding graph.

2. A Gregorian telescope contains two mirrors whose cross sections can be modeled by the equations $405x^2 + 729y^2 - 295{,}245 = 0$ and $-120y^2 - 1440x = 0$. What types of mirrors are each?

SAT Prep:

1. The equation $4x^2 - 9y^2 - 18x + 3y - 12 = 0$ represents which conic section?

   (A) Circle (B) Ellipse

   (C) Hyperbola (D) Parabola

2. The midpoint between $(x, 2)$ and $(-5, -6)$ is $\left(\frac{1}{2}, -2\right)$. What is the value for x?