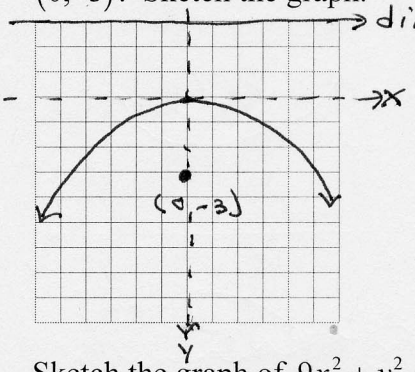
Math 116
Dusty Wilson
Review: Chapter 11

Names: _____

1. Find the equation of a parabola with vertex at the origin, axis the x- or y-axis, and focus $(0,-3)$. Sketch the graph.

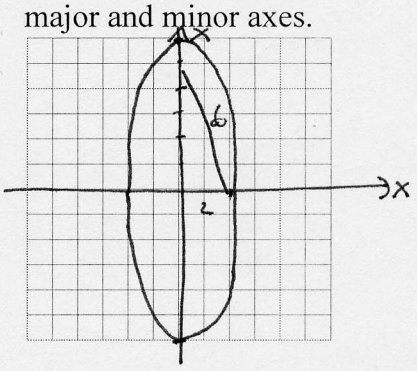


$x^2 = 4ay$

$x^2 = 4(-3)y$

$x^2 = -12y$

2. Sketch the graph of $9x^2 + y^2 = 36$. Find the coordinates of the foci and the lengths of the major and minor axes.



$\frac{x^2}{4} + \frac{y^2}{36} = 1$

foci at $(0, \pm 4\sqrt{2})$.

$\sqrt{36-4} = \sqrt{32}$.

length of major axis = 12

" " minor " = 4.

3. Algebraically find the intersection between $50x^2 - 4y^2 = 100$ and $25x^2 + y^2 = 125$. Show your work. (Hint: It might help to graph the curves first so you have some idea what you are looking for. Then again, it might not help).

backwards substitution

$y^2 = 125 - 25x^2$.

$y^2 = 125 - 25(\pm 2)^2$

$\Rightarrow 50x^2 - 4(125 - 25x^2) = 100$ $\Rightarrow y^2 = 125 - 100$

$\Rightarrow 50x^2 - 500 + 100x^2 = 100$ $\Rightarrow y^2 = \pm 25$

$\Rightarrow 150x^2 = 600$ $\Rightarrow y = \pm 5$

$\Rightarrow x^2 = 4$

$\Rightarrow x = \pm 2$.

4 SOLUTIONS