MATH 119: Quiz 7

Name: key

Directions:

- Show your thought process (commonly said as "show your work") when solving each problem for full credit. **Remember to fully simplify.**
- If you do not know how to solve a problem, try your best and/or explain in English what you would do.
- Good luck!

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1. Draw an accurate graph of

$$x^2 + 4y^2 = 16$$

Include the foci.

$\frac{x^2 + 4y^2}{16} = \frac{16}{16}$

$\frac{x^2}{16} + \frac{y^2}{4} = 1$

a^2 b^2

So $a = 4, b = 2$.

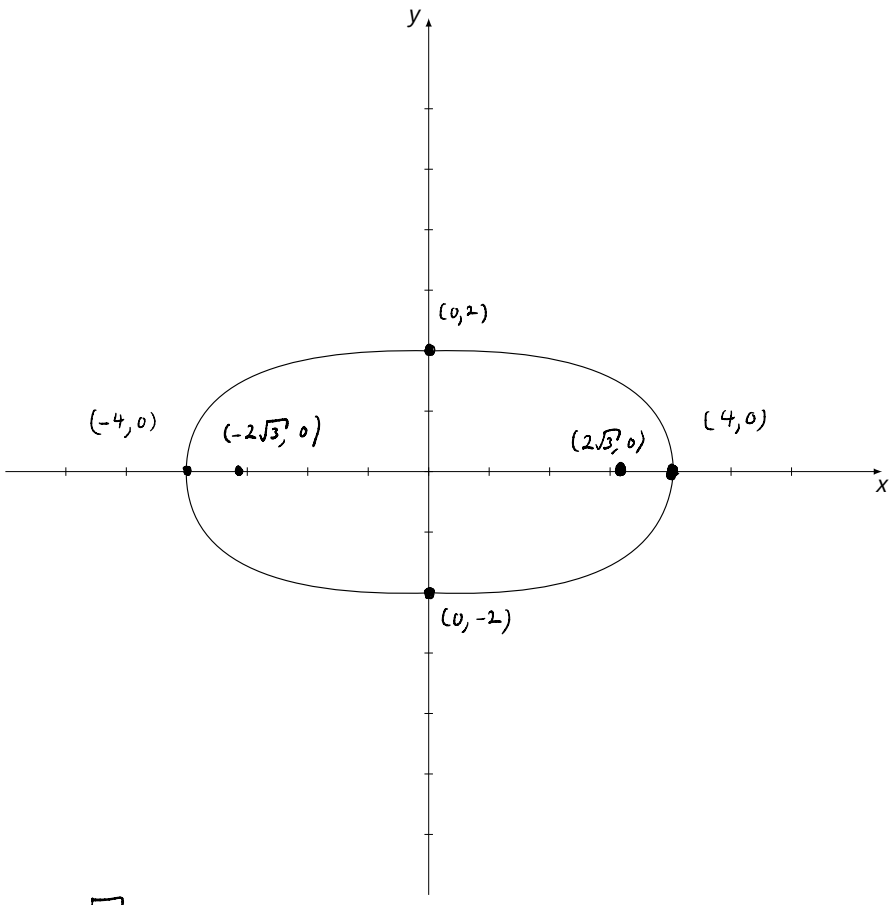
Foci: $(\pm c, 0)$

$c^2 = a^2 - b^2$

$= 16 - 4$

$= 12$

$c = \pm\sqrt{12} = \pm\sqrt{4 \cdot 3} = \pm 2\sqrt{3}$



2. Find the equation of an ellipse with foci $(\pm 2, 0)$ and vertices $(\pm 3, 0)$ or state it's impossible to.

Foci / vertices on x-axis. Use $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

vertices: $(\pm a, 0)$ so $a = 3$

foci: $(\pm c, 0)$ where $c^2 = a^2 - b^2$.

So $2^2 = 3^2 - b^2$

$4 = 9 - b^2$

$b^2 = 9 - 4 = 5$

Equation: $\frac{x^2}{9} + \frac{y^2}{5} = 1$

3. What type of conic section is

$$x^2 - 9y^2 + 1 = 0$$

$1 = 9y^2 - x^2$

Hyperbola!