

Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. Determine the type of conic and write it in standard form. Use the standard form to sketch the graph.

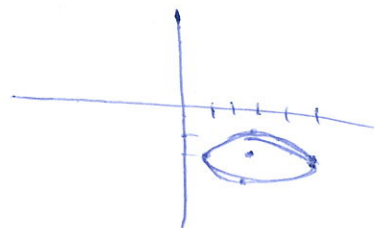
a. $x^2 + 4y^2 - 6x + 16y + 21 = 0$

ellipse

$$(x^2 - 6x + 9) + 4(y^2 + 4y + 4) = -21 + 9 + 16$$

$$\frac{(x-3)^2}{4} + \frac{4(y+2)^2}{4} = \frac{4}{4}$$

$$\frac{(x-3)^2}{4} + (y+2)^2 = 1$$



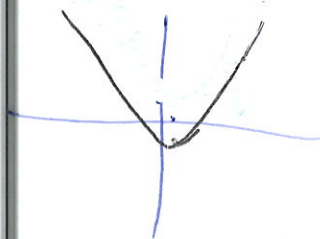
b. $25x^2 - 10x - 200y - 119 = 0$

parabola

$$25(x^2 - \frac{2}{5}x + \frac{1}{25}) = 200y + 119 + 1$$

$$\frac{25(x - \frac{1}{5})^2}{25} = \frac{200(y + \frac{3}{5})}{25}$$

$$(x - \frac{1}{5})^2 = 8(y + \frac{3}{5})$$



c. $4x^2 - y^2 - 4x - 3 = 0$

hyperbola

$$4(x^2 - x + \frac{1}{4}) - y^2 = 3 + 1$$

$$\frac{4(x - \frac{1}{2})^2}{4} - \frac{y^2}{4} = \frac{4}{4}$$

$$(x - \frac{1}{2})^2 - \frac{y^2}{4} = 1$$

