Review

Ex $\frac{(x-2)^2}{16} + \frac{(y-3)^2}{25} = 1$ $a^2 \geq b^2$

$\therefore a = 5$

Center: $(2, 3)$ $b = 4$

Foci: $(2, 3 \pm 3)$ $c = 3$

$(2, 6)$ $c^2 = a^2 - b^2$

$(2, 0)$ $c^2 = 25 - 16$

$c^2 = 9$

Convert to standard form

Ex.

$$4x^2 + 9y^2 - 8x + 54y + 49 = 0$$

-49 -49

$$4x^2 - 8x + 9y^2 + 54y = -49$$

$$4\left(x^2 - 2x + \left(\tfrac{-2}{2}\right)^2\right) + 9\left(y^2 + 6y + \left(\tfrac{6}{2}\right)^2\right) = -49$$

$$4(x^2 - 2x + 1) + 9(y^2 + 6y + 9) = -49 + 1(4) + 9(9)$$

$$\frac{4(x-1)^2}{4 \cdot 9} + \frac{9(y+3)^2}{4 \cdot 9} = \frac{36}{4 \cdot 9}$$

$$\frac{(x-1)^2}{9} + \frac{(y+3)^2}{4} = 1$$