

b) focus at $(-12,0)$ and major axis=26 units

↳ foci must be located along major axis
↳ horizontal

major hor. axis = $2a$

$$26 = 2a$$

$$a = 13$$

$$c = 12$$

$$a^2 = b^2 + c^2$$

$$13^2 = b^2 + 12^2$$

$$169 - 144 = b^2$$

$$b^2 = 25$$

$$\frac{x^2}{169} + \frac{y^2}{25} = 1 \quad \text{Standard}$$

$$25x^2 + 169y^2 = 4225$$

$$25x^2 + 169y^2 - 4225 = 0 \quad \text{General}$$

c) how far apart are two points that have $y=2$?

$$\frac{x^2}{169} + \frac{y^2}{25} = 1$$

$$\frac{x^2}{169} + \frac{2^2}{25} = 1$$

$$\frac{x^2}{169} = 1 - \frac{4}{25}$$

$$\frac{x^2}{169} = \frac{21}{25}$$

$$x^2 = \frac{21 \cdot 169}{25}$$

$$x = \pm \sqrt{\frac{21 \cdot 169}{25}} = \pm \frac{13\sqrt{21}}{5}$$

$$\Delta x = 2 \left(\frac{13\sqrt{21}}{5} \right) = \frac{26\sqrt{21}}{5}$$

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3. b) $b = 16$
 $(x, y) = (-6.4, 9.6)$

$$\frac{x^2}{64} + \frac{y^2}{256} = 1$$

$$\frac{x^2}{a^2} + \frac{y^2}{16^2} = 1$$
$$\frac{(-6.4)^2}{a^2} + \frac{(9.6)^2}{256} = 1$$

$$\frac{40.96}{a^2} + \frac{92.16}{256} = 1$$

$$\frac{40.96}{a^2} = 0.64$$

$$a^2 = \frac{40.96}{0.64} = 64$$

