

pg 9.14

#4

$$x^2 = 6\left(y + \frac{2}{3}\right)$$

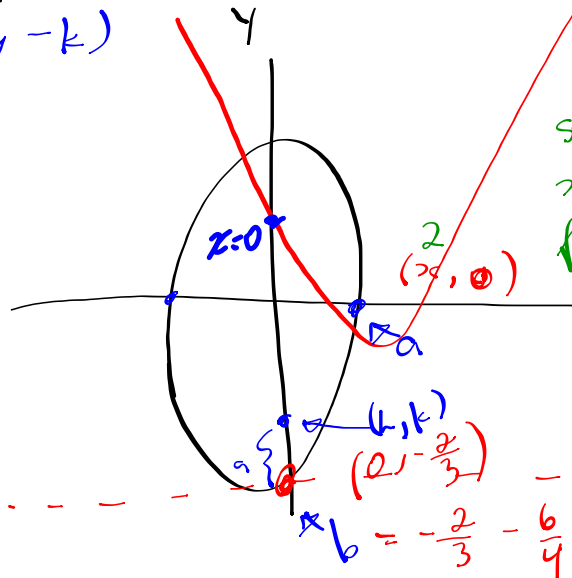
$$(x-h)^2 = 4a(y-k)$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

$(0, -\frac{2}{3})$ v

$$\frac{4a = 6}{4} \quad \frac{6}{4}$$

$$a = \frac{6}{4}$$



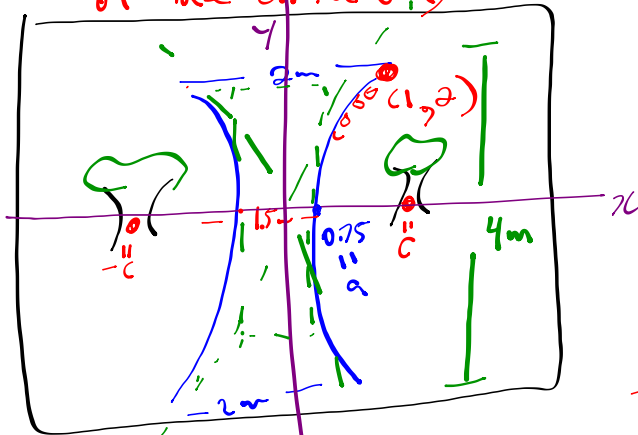
sub $y=0$
 $x^2 = 6\left(0 + \frac{2}{3}\right)$
 $\sqrt{x^2} = \sqrt{\frac{12}{3}}$
 $x = \sqrt{\frac{12}{3}}$
 $x = \sqrt{4}$
 $x = 2$

$$b = \frac{13}{6}$$

$$\frac{x^2}{2^2} + \frac{y^2}{\left(\frac{13}{6}\right)^2} = 1$$

Unit 10: Finding the Equation of a Conic described by a word question

P10.1 Find the equation of the driveway



- Sketch / Label
- Be strategic in where you centre your origin
(hyperbola → at its centre
ellipse → " " "
circle → depends
parabola → depends)

• Pick appropriate starting equation.

• Label points/parameters by translating sentences and/or conceptualizing

• Find last parameter either with the appropriate focal length formula, or by temp. substituting in a point on the graph.

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

$$\frac{x^2}{0.75^2} - \frac{y^2}{b^2} = 1$$

to find b: sub in (1, 2)

$$\frac{1^2}{0.75^2} - \frac{2^2}{b^2} = 1$$

$$\frac{1^2}{0.75^2} - 1 = \frac{4}{b^2}$$

$$\frac{7}{9} = \frac{4}{b^2}$$

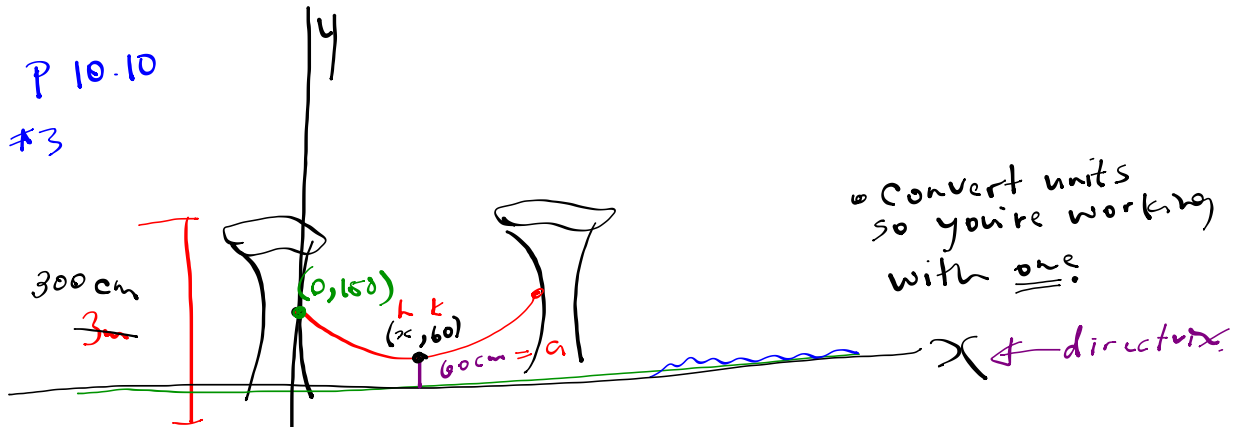
$$b^2 \cdot 7 = 4 \cdot 9$$

$$b^2 = \frac{36}{7}$$

$$b = 2.268$$

$$\frac{a}{b} = \frac{c}{d}$$

$$\frac{x^2}{0.75^2} - \frac{y^2}{2.268^2} = 1$$



$$(x-h)^2 = 4a(y-k)$$

put your x-axis at the ground or water level.

$$(x - 146.97)^2 = 240(y - 60)$$

$$(x-h)^2 = 4(60)(y-60)$$

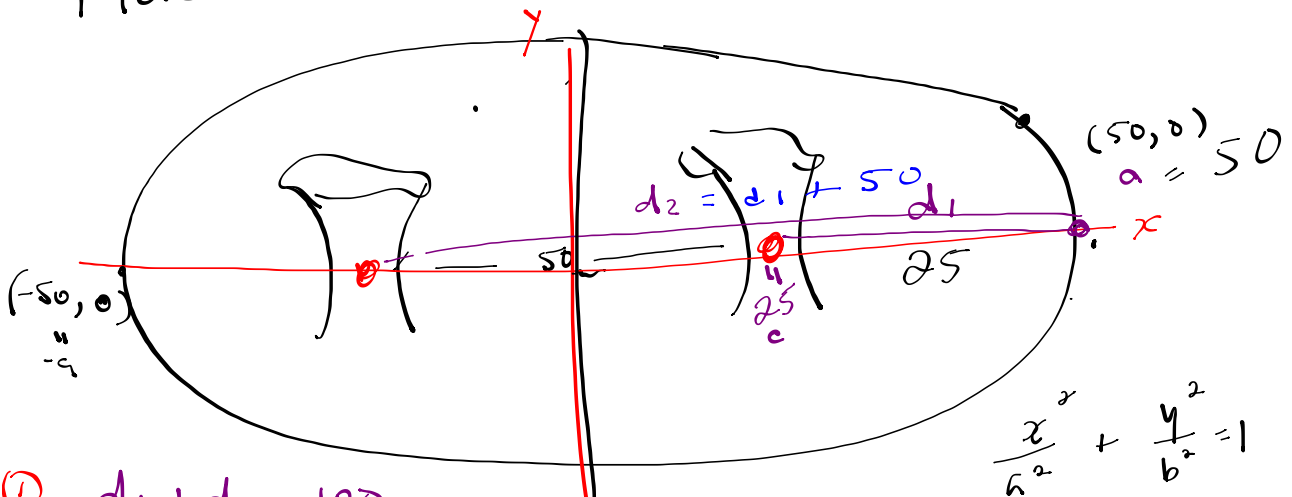
Sub in $(0, 150)$ to find last parameter

$$(0-h)^2 = 4(60)(150-60)$$

$$h^2 = 21600$$

$$h = \pm 146.97 \text{ cm}$$

¶ 10.8



① $d_1 + d_2 = 100$

② $d_2 - d_1 = 50$. try to construct another equation (cuz there's two unknowns)
 isolate d_2 in ② . try to write one unknown in terms of the other unknown.

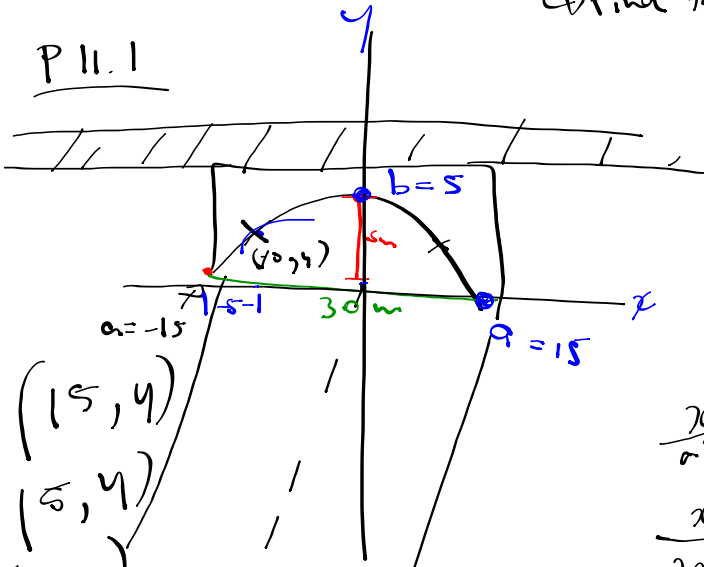
② $d_2 = 50 + d_1$
 sub ② into ①

$d_1 + 50 + d_1 = 100 - 50$
 $2d_1 = \frac{50}{2}$ $d_1 = 25$

Unit 11: Solving Word Problems Involving Conics

↳ find the coordinates of a point (x, y) of conc.

↳ you'll have to construct the equation



Label axes
establishing equation

Translate the question into a point on the graph

What's height of the tower over pass 5 m from the base?

- $(15, y)$
- $(5, y)$
- $(10, y)$
- $(10, y)$

↳ Sub $x = -10$ into equation

$$\frac{(-10)^2}{225} + \frac{y^2}{25} = 1$$

solve for y , by isolating by performing opposite operation to both sides

$$\frac{y^2}{25} = \left(1 - \frac{(10)^2}{225}\right) 25$$

$$y^2 = \sqrt{\left(1 - \frac{(10)^2}{225}\right) 25}$$

$$y = 3.73 \text{ m}$$

∴ the bridge is 3.73 m high 5 m away from the base.

Do Ex 2 on 11.2