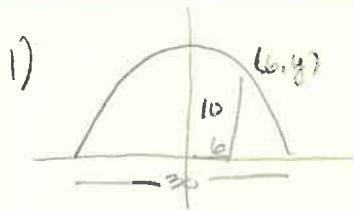


Conics Word Problem Practice



$$y = ax^2 + 10$$

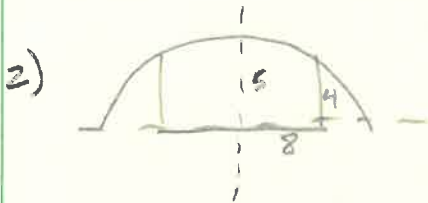
$$0 = a(15)^2 + 10$$

$$-10 = a(225)$$

$$-0.44 = a \left(-\frac{2}{45}\right)$$

$$y = -\frac{2}{45}(36) + 10$$

$$y = 8.4 \text{ ft}$$



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

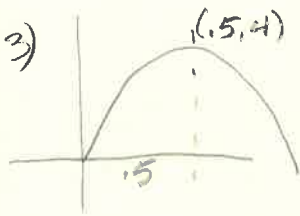
$$\frac{64}{a^2} + \frac{16}{25} = 1$$

$$\frac{64}{a^2} = \frac{9}{25}$$

$$9a^2 = 1600$$

$$a = \frac{40}{3}$$

$$2a = \frac{80}{3} = 26.67 \text{ ft}$$



$$y = a(x - 0.5)^2 + 4$$

$$0 = a(-0.5)^2 + 4$$

$$-\frac{4}{0.25} = a$$

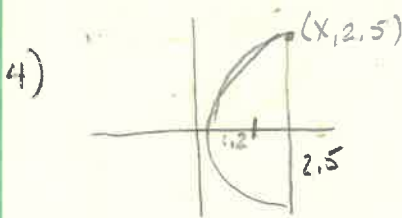
$$-16 = a$$

$$y = -16(x - 0.5)^2 + 4$$

$$y = -16(0.75 - 0.5)^2 + 4$$

$$= -16(0.25)^2 + 4$$

$$= 3 \text{ feet}$$



$$x = ay^2$$

$$p = \frac{1}{4a}$$

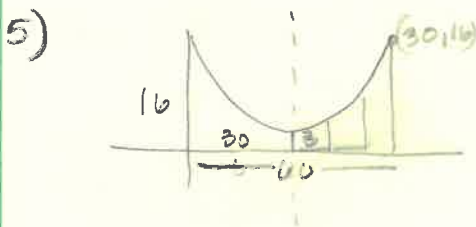
$$x = \frac{5}{24}y^2$$

$$= \frac{1}{4(0.12)}$$

$$= \frac{10}{48} = \frac{5}{24}$$

$$x = \frac{5}{24}(2.5)^2$$

$$x = 1.30 \text{ m}$$



$$y = ax^2 + 3$$

$$16 = a(30)^2 + 3$$

$$\frac{13}{900} = a$$

$$y = \frac{13}{900}x^2 + 3$$

$$y = \frac{13}{900}(36) + 3$$

$$= 3.52$$

$$y = \frac{13}{900}(144) + 3$$

$$= 5.08$$

$$6) \quad \frac{x^2}{30^2} - \frac{y^2}{44^2} = 1$$

$$\frac{x^2}{30^2} - \frac{502}{44^2} = 1$$

$$\frac{x^2}{30^2} = 2.29$$

$$x^2 = 2062.19$$

$$x = 45.41$$

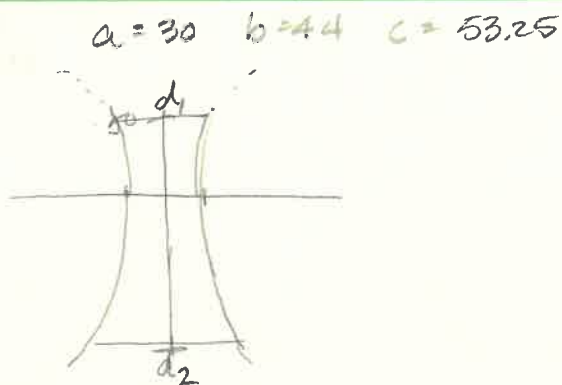
diameter 90.82

$$\frac{x^2}{30^2} - \frac{100^2}{44^2} = 1$$

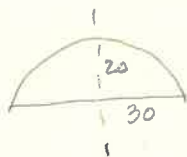
$$\frac{x^2}{30^2} = 6.165$$

$$x^2 = 5548.76$$

$$x = 74.49$$



7)



$$\frac{x^2}{900} + \frac{y^2}{400} = 1$$

$$x = 5 \quad \frac{y^2}{400} = 1 - \frac{25}{900}$$

$$\frac{y^2}{400} = \frac{875}{900}$$

$$y = 19.72$$

$$x = 10 \quad \frac{y^2}{400} = 1 - \frac{100}{900}$$

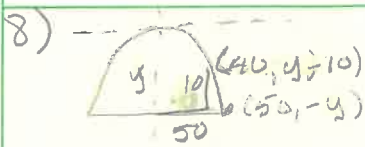
$$\frac{y^2}{400} = \frac{800}{900}$$

$$y = 18.86$$

$$x = 20 \quad \frac{y^2}{400} = 1 - \frac{400}{900}$$

$$\frac{y^2}{400} = \frac{500}{900}$$

$$y = 14.91$$



$$y = ax^2 - (y-10) = a(40)^2$$

$$-y = a(50)^2 \Rightarrow y = -2500a$$

$$-(-2500 \times 10) = 16000a$$

$$2500 + 10 = 1600a$$

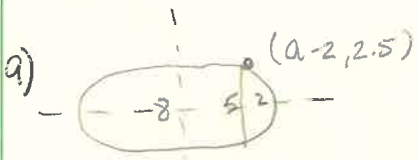
$$900a = 10$$

$$a = \frac{1}{90}$$

$$y = -\frac{1}{90}x^2$$

$$y = -\frac{1}{90}(50)^2$$

$$= 27.78$$



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

$$\frac{(a-2)^2}{a^2} + \frac{2.5^2}{4^2} = 1$$

$$\frac{(a-2)^2}{a^2} = 1 - \frac{6.25}{16}$$

$$\frac{(a-2)^2}{a^2} = \frac{9.75}{16}$$

$$16(a-2)^2 = 9.75a^2$$

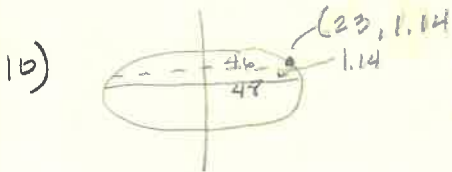
$$16a^2 - 64a + 64 = 9.75a^2$$

$$6.25a^2 - 64a + 64 = 0$$

$$\frac{64 \pm \sqrt{64^2 - 4(6.25)(64)}}{2 \cdot 6.25}$$

$$a = 9.11$$

$$2a = 18.23 \text{ ft}$$



$$\frac{x^2}{24^2} + \frac{y^2}{b^2} = 1$$

$$\frac{23^2}{24^2} + \frac{1.14^2}{b^2} = 1$$

$$\frac{1.14^2}{b^2} = 1 - \frac{23^2}{24^2}$$

$$\frac{1.14^2}{b^2} = \frac{47}{24^2}$$

$$b^2 = 15.93$$

$$\rightarrow a) \frac{x^2}{576} + \frac{y^2}{15.93} = 1$$

$$b) \sqrt{15.93} = 3.99$$

$$\text{Wing} = 5.13$$