

Homework #72

Answers

From Houghton-Mifflin Precalculus

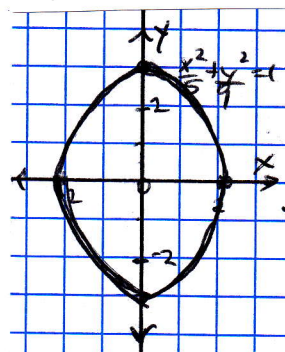
3rd Edition

p710:

$$9) \frac{x^2}{5} + \frac{y^2}{9} = 1 \quad \text{center: } (0, 0), \text{ vertical}$$

$$a = 3, \text{ vertices: } (0, -3), (0, 3)$$

$$c^2 = 9 - 5 = 4, c = 2, \text{ foci: } (0, -2), (0, 2)$$



$$10) \frac{x^2}{64} + \frac{y^2}{28} = 1 \quad \text{center: } (0, 0), \text{ horizontal, } a = 8, \text{ vertices: } (-8, 0), (8, 0)$$

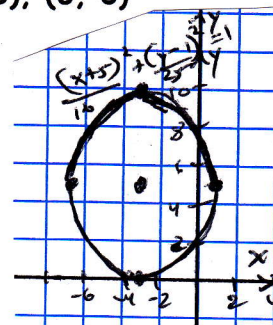
$$c^2 = 64 - 28 = 36, c = 6, \text{ foci: } (-6, 0), (6, 0)$$

$$11) \frac{(x + 3)^2}{16} + \frac{(y - 5)^2}{25} = 1 \quad \text{center: } (-3, 5)$$

$$\text{vertical}$$

$$a = 5, \text{ vertices: } (-3, 0), (-3, 10)$$

$$c^2 = 25 - 16 = 9, c = 3, \text{ foci: } (-3, -3), (-3, 13)$$



$$13) \frac{(x + 5)^2}{9/4} + \frac{(y - 1)^2}{1} = 1 \quad \text{center: } (-5, 1), \text{ horizontal}$$

$$a = 3/2, \text{ vertices: } (-6.5, 1), (-3.5, 1)$$

$$c^2 = 9/4 - 1 = 5/4, c = \sqrt{5}/2, \text{ foci: } (-5 + \sqrt{5}/2, 1), (-5 - \sqrt{5}/2, 1)$$

$$15) 9x^2 + 4y^2 + 36x - 24y + 36 = 0$$

$$9x^2 + 36x + 4y^2 - 24y = -36$$

$$9(x^2 + 4x) + 4(y^2 - 6y) = -36$$

$$9(x^2 + 4x + 4) + 4(y^2 - 6y + 9) = -36 + 36 + 36$$

$$9(x + 2)^2 + 4(y - 3)^2 = 36$$

$$\frac{(x + 2)^2}{4} + \frac{(y - 3)^2}{9} = 1 \quad \text{center: } (-2, 3), \text{ vertical}$$

$$a = 3, \text{ vertices: } (-2, 0), (-2, 6)$$

$$c^2 = 9 - 4 = 5, c = \sqrt{5}, \text{ foci: } (-2, 3 + \sqrt{5}), (-2, 3 - \sqrt{5})$$

$$16) 9x^2 + 4y^2 - 54x + 40y + 37 = 0$$

$$9x^2 - 54x + 4y^2 + 40y = -37$$

$$9(x^2 - 6x) + 4(y^2 + 10y) = -37$$

$$9(x^2 - 6x + 9) + 4(y^2 + 10y + 25) = -37 + 81 + 100$$

$$9(x - 3)^2 + 4(y + 5)^2 = 144$$

$$\frac{(x - 3)^2}{16} + \frac{(y + 5)^2}{36} = 1 \quad \text{center: } (3, -5), \text{ vertical}$$

$$a = 6, \text{ vertices: } (3, 1), (3, -11)$$

$$c^2 = 36 - 16 = 20, c = 2\sqrt{5}, \text{ foci: } (3, -5 + 2\sqrt{5}), (3, -5 - 2\sqrt{5})$$