

## Homework #79

## Answers

From Houghton-Mifflin Precalculus

3<sup>rd</sup> Edition

P736-737:

$$14) x = 3 - 2t, y = 2 + 3t, \quad 1^{\text{st}} \text{ equation becomes: } t = (x - 3)/-2$$

$$y = 2 + 3[(x - 3)/-2] \quad \text{or} \quad y = (-3/2)x + 13/2$$

$$15) x = (1/4)t, y = t^2, \quad 1^{\text{st}} \text{ equation becomes: } t = 4x$$

$$y = (4x)^2 \text{ or } y = 16x^2$$

$$18) x = \sqrt{t}, y = t - 1, \quad 1^{\text{st}} \text{ equation becomes: } t = x^2$$

$$y = 1 - x^2$$

$$20) x = |t - 1|, y = t + 2, \quad 2^{\text{nd}} \text{ equation becomes: } t = y - 2$$

$$x = |(y - 2) - 1| \text{ or } x = |y - 3|$$

$$21) x = 3 \cos \theta, y = 3 \sin \theta, \quad \cos \theta = x/3, \sin \theta = y/3$$

$$\sin^2 \theta + \cos^2 \theta = x^2/9 + y^2/9, \quad x^2/9 + y^2/9 = 1, \quad x^2 + y^2 = 9$$

$$37) x = x_1 + t(x_2 - x_1), y = y_1 + t(y_2 - y_1),$$

$$1^{\text{st}} \text{ equation becomes: } t = (x - x_1)/(x_2 - x_1)$$

$$y = y_1 + [(x - x_1)/(x_2 - x_1)](y_2 - y_1), \quad y - y_1 = m(x - x_1)$$

$$38) x = h + r \cos \theta, y = k + r \sin \theta, \quad x - h = r \cos \theta \text{ and } y - k = r \sin \theta$$

$$(x - h)^2 = r^2 \cos^2 \theta$$

$$+ (y - k)^2 = r^2 \sin^2 \theta$$

$$(x - h)^2 + (y - k)^2 = r^2(\cos^2 \theta + \sin^2 \theta), \quad (x - h)^2 + (y - k)^2 = r^2$$

$$39) x = h + a \cos \theta, y = k + b \sin \theta, \quad x - h = a \cos \theta \text{ and } y - k = b \sin \theta$$

$$(x - h)^2 = a^2 \cos^2 \theta \quad \text{and} \quad (y - k)^2 = b^2 \sin^2 \theta$$

$$\frac{(x - h)^2}{a^2} = \cos^2 \theta$$

$$+ \frac{(y - k)^2}{b^2} = \sin^2 \theta$$

$$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$$

$$40) x = h + a \sec \theta, y = k + b \tan \theta, \quad x - h = a \sec \theta \text{ and } y - k = b \tan \theta$$

$$(x - h)^2 = a^2 \sec^2 \theta \text{ and } (y - k)^2 = b^2 \tan^2 \theta$$

$$\frac{(x - h)^2}{a^2} = \sec^2 \theta$$

$$- \frac{(y - k)^2}{b^2} = \tan^2 \theta$$

$$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$$