1. Given the point on the plane, give the trigonometric function values of the angle the line segment from the origin to the point makes with the x-axis.

   (a) \((2, 3)\) \(\sin \theta=\) \(\cos \theta=\) \(\tan \theta=\)

   (b) \((-5, 4)\) \(\sin \theta=\) \(\cos \theta=\) \(\tan \theta=\)

   (c) \((-6, -8)\) \(\sin \theta=\) \(\cos \theta=\) \(\tan \theta=\)

   (d) \((3, 1)\) \(\sin \theta=\) \(\cos \theta=\) \(\tan \theta=\)

2. A 40 ft ladder leans against a wall making an angle of 60° with the ground.

   (a) At what height is the tip of the ladder touching the wall?  

   (b) How far from the wall is the foot of the ladder? 

3. A 70 ft ladder leans against a wall making an angle of 45° with the ground.

   (a) At what height is the tip of the ladder touching the wall?  

   (b) How far from the wall is the foot of the ladder? 

4. Consider a right triangle (as if in the first quadrant). From the given trigonometric value of the base angle, \(\theta\), determine the other trigonometric values of the angle \(\theta\).

   (a) \(\cos (\theta) = \frac{1}{3}\) \(\sin (\theta)=\) \(\tan (\theta)=\)

   (b) \(\cos (\theta) = .8\) \(\sin (\theta)=\) \(\tan (\theta)=\)

   (c) \(\sin (\theta) = \frac{4}{9}\) \(\cos (\theta)=\) \(\tan (\theta)=\)

   (d) \(\tan (\theta) = .75\) \(\sin (\theta)=\) \(\cos (\theta)=\)
5. Solve the following equations for all possible $\theta$ so that $0 \leq \theta < 2\pi$ (values within one revolution of the unit circle).

(a) $\sin^2(\theta) - 1 = 0 \quad \theta=$

(b) $4\cos^2(\theta) = 1 \quad \theta=$

(c) $2\sin^2(\theta) - \sin(\theta) - 1 = 0 \quad \theta=$

(d) $\sin^2(\theta) = 3\cos^2(\theta) \quad \theta=$

6. Solve the following equations for all possible $\theta$ so that $0 \leq \theta < 2\pi$ (values within one revolution of the unit circle).

(a) $\sin(\theta) = .4 \quad \theta=$

(b) $\tan(\theta) = \frac{1}{2} \quad \theta=$

(c) $12\cos^2(\theta) - 7\cos(\theta) + 1 = 0 \quad \theta=$

(d) $15\cos^2(\theta) - \cos(\theta) - 6 = 0 \quad \theta=$

(e) $\tan^2(\theta) + \tan(\theta) - 12 = 0 \quad \theta=$

(f) $3\sin^2(\theta) - 10\sin(\theta) + 3 = 0 \quad \theta=$