NAME: Solution

MAC 1147 Section 3077
Quiz Eight

Please show all of your work in a NEAT and ORGANIZED fashion.

1. Use the given function value and the trigonometric identities to find the indicated trigonometric functions. (Assume $\theta$ lies in Quadrant I.)

$$\sin(\theta) = \frac{1}{4}$$

(a) (2 points) $\cos(\theta)$

$$\sin^2(\theta) + \cos^2(\theta) = 1$$

$$\frac{1}{16} + \cos^2(\theta) = 1$$

$$\cos^2(\theta) = \frac{15}{16} \rightarrow \cos(\theta) = \frac{\sqrt{15}}{4}$$

(b) (1 point) $\tan(\theta)$

$$\tan(\theta) = \frac{\sin \theta}{\cos \theta} = \frac{1/4}{\sqrt{15}/4} = \frac{1}{\sqrt{15}}$$

OR

$$\frac{\tan}{\tan^2 + 1} = \frac{\sqrt{15}}{4}$$

2. (3 points) Find two solutions of the following equation. Give your answers in degrees AND radians.

$$\sec(\theta) = -2 \rightarrow \cos(\theta) = -\frac{1}{2}$$

Quadrant II: $\theta = \frac{2\pi}{3}, 120^\circ$

Quadrant III: $\theta = \frac{4\pi}{3}, 240^\circ$

3. (3 points) Sketch the graph of $g$. Include two full periods.

$$g(x) = 2 \cos(x + \pi)$$

Amplitude = 2, period = $2\pi$

$x + \pi = 0 \quad x + \pi = 2\pi$

$x = -\pi \quad x = \pi$

→ Key points:

$(-\pi, 2), (-\frac{\pi}{2}, 0), (0, -2), (\frac{\pi}{2}, 0), \pi, 2)$