

6.1 Quiz Key

Friday, February 06, 2009
9:44 PM

Precalculus BC Quiz #3-1
Hungerford 6.1-6.2

Name: Key Per: _____
February 2, 2009

Questions 1-4 are worth 2 points each; questions 5 and 6 are worth 4 points each.

1. Convert -40° to radians $-\frac{2\pi}{9}$

2. Convert $\frac{21}{4}\pi$ radians to degrees 945°

$$\frac{21\pi}{4} \cdot \frac{180}{\pi} =$$

3. Find an angle in $[0, 2\pi)$ coterminal with $\frac{225}{3}\pi$.

$$\frac{225}{3}\pi = 75\pi \approx \pi$$

4. Name *all* angles coterminal with $-\pi/4$.

$$-\pi/4 + 2k\pi, k \in \mathbb{Z}$$

5. In one day orbiting the Sun, Mars travels an arc of 0.52° . If it travels 2 million miles in that time, how far from the Sun is it? (Assume a circular orbit.) (4 pts)

$$r\theta = s; \left(0.52^\circ \cdot \frac{\pi}{180}\right) \cdot r = 2000000$$

$$r = \frac{2000000}{\frac{.52\pi}{180}} \approx 2.2 \times 10^7 \text{ miles}$$

6. A wheel is turning at an angular velocity of ω radians per second, and its radius is 30 cm. If a point on the outer edge of the wheel is moving at 75 cm/sec, find ω . (4 pts)

$$30\omega = 75 \Rightarrow \omega = \frac{75}{30} = 2.5 \text{ rad/sec}$$

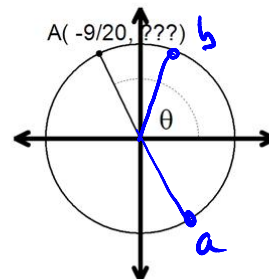
7. Use the unit circle at right to sketch each angle and compute the indicated trig function. (2 pts each)

a. $\cos(\theta + \pi)$

$$\cos(\theta + \pi) = -\frac{9}{20}$$

b. $\sin(\pi - \theta)$

$$\begin{aligned} \sin(\pi - \theta) &= \sin \theta = \sqrt{1 - \cos^2 \theta} \\ &= \sqrt{1 - \frac{81}{400}} = \sqrt{\frac{319}{400}} = \frac{\sqrt{319}}{20} \end{aligned}$$



Questions 1-4 are worth 2 points each; questions 5 and 6 are worth 4 points each.

1. Convert -80° to radians $-\frac{4\pi}{9}$

2. Convert $\frac{27}{4}\pi$ radians to degrees 1215°

$$\frac{27}{4}\pi \cdot \frac{180}{\pi} =$$

3. Find an angle in $[0, 2\pi)$ coterminal with $\frac{80}{3}\pi$.

$$26\frac{2}{3}\pi \rightarrow \left(\frac{2\pi}{3}\right)$$

-26π

4. Name *all* angles coterminal with $-3\pi/4$.

$$-\frac{3\pi}{4} + 2n\pi, n \in \mathbb{Z}$$

5. In one day orbiting the Sun, Venus travels an arc of 1.59° . If it travels 3 million miles in that time, how far from the Sun is it? (Assume a circular orbit.) (4 pts)

$$s = r \cdot \theta \Rightarrow 3000000 = \left(1.59^\circ \cdot \frac{\pi}{180}\right) \cdot r$$

$$r = \frac{3000000}{1.59^\circ \cdot \frac{\pi}{180}} \approx 1.08 \times 10^7$$

6. A wheel is turning at an angular velocity of ω radians per second, and its radius is 20 cm. If a point on the outer edge of the wheel is moving at 75 cm/sec, find ω . (4 pts)

$$20 \cdot \omega = 75 \Rightarrow \omega = \frac{75 \text{ cm/sec}}{20 \text{ cm}} = 3.75/\text{sec}$$

7. Use the unit circle at right to sketch each angle and compute the indicated trig function. (2 pts each)

a. $\cos(\theta + \pi)$

$$\frac{2}{5}$$

b. $\sin(\pi - \theta)$

$$\frac{5}{17} = \sqrt{1 - \left(\frac{3}{17}\right)^2}$$

