

### Pre-Calculus Worksheet #3

#### Sec. 4.1-4.4 Review

1. Find the exact value. NO CALCULATOR

a.  $\sin \frac{7\pi}{6}$       b.  $\cos(-3\pi)$       c.  $\tan 240^\circ$       d.  $\sec\left(-\frac{2\pi}{3}\right)$       e.  $\cot \frac{4\pi}{3}$

f.  $\tan 135^\circ$       g.  $\sin \frac{7\pi}{2}$       h.  $\csc \frac{3\pi}{4}$

2. Given  $\sin \theta = -\frac{1}{4}$  and  $\frac{3\pi}{2} \leq \theta \leq 2\pi$ , Find the exact value of the following:

a.  $\tan \theta$       b.  $\csc\left(\frac{\pi}{2} - \theta\right)$

3. Convert  $-\frac{11\pi}{9}$  into degrees (no calculator)

4. Convert  $320^\circ$  into radians (no calculator)

5. Give one negative and one positive coterminal angle if  $\theta = -\frac{23\pi}{5}$

6. Find the length of an arc that subtends [forms] a central angle of  $45^\circ$  in a circle of radius 10 m. Exact value

7. A radial saw has a blade with a 6-in radius. Suppose the blade spins at 1000 rpm.

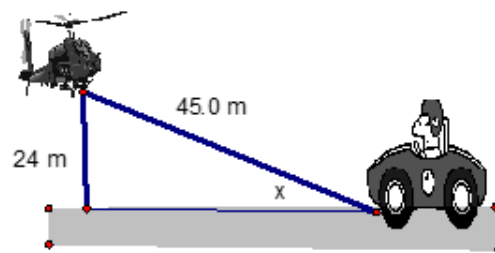
a) Find the angular speed of the blade in rad/min. (Exact value)

b) Find the linear speed of the saw teeth in ft/sec. Give exact value, then round to 3 decimal places.

8. The wheels of a car have a diameter of 22 in and are rotating at 600 rpm. Find the speed of the car in mi/hr. Round to 3 decimal places.

9.

A helicopter is hovering above a road at an altitude of 24 m. At a certain time, the distance between the helicopter and a car on the road is 45.0 m. Calculate the angle of elevation of the helicopter from the car.



Answers:

1a)  $-\frac{1}{2}$     1b)  $-1$     1c)  $\sqrt{3}$     1d)  $-2$     1e)  $\frac{\sqrt{3}}{3}$     1f)  $-1$     1g)  $-1$     1h)  $\sqrt{2}$     2a)  $-\frac{\sqrt{15}}{15}$     2b)  $\frac{4\sqrt{15}}{15}$

3)  $-220^\circ$     4)  $\frac{16\pi}{9}$     5) positive:  $\frac{7\pi}{5}$ , negative:  $-\frac{3\pi}{5}$     6)  $\frac{5\pi}{2}$  meters    7a)  $2000\pi$  rad/min

7b)  $\frac{50\pi}{3}$  ft/sec; 52.360 ft/sec    8. 39.270 mi/hr    9.  $32.231^\circ$  is the angle of elevation