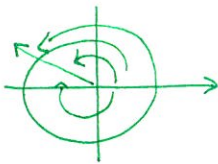


Use a calculator on the problems in bold print. Otherwise, give exact answers without using a calculator.

1. Draw the angle in standard position and give the indicated information.

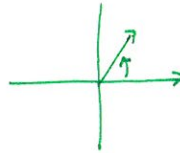
a)  $\frac{5\pi}{6}$ , give a coterminal angle



$$\boxed{\frac{17\pi}{6} \text{ or } -\frac{7\pi}{6}}$$

or ...

b)  $\frac{3\pi}{8}$ , give its complement and supplement



comp.  $\frac{\pi}{2} - \frac{3\pi}{8} = \boxed{\frac{\pi}{8}}$

suppl.  $\pi - \frac{3\pi}{8} = \boxed{\frac{5\pi}{8}}$

2. Convert to degrees:  $\frac{7\pi}{5}$

$$\frac{7\pi}{5} \cdot \frac{180}{\pi} = \boxed{252^\circ}$$

3. One radian is how many degrees?

$$1 \cdot \frac{180}{\pi} \approx \boxed{57.3^\circ}$$

4.  $5^\circ$  is exactly how many radians?

$$5 \cdot \frac{\pi}{180} = \boxed{\frac{\pi}{36}}$$

5. A circle of radius  $r$  has a central angle of  $15^\circ$  which intercepts an arc of 23 inches. Find the length of the radius.

①  $15^\circ \cdot \frac{\pi}{180} = \frac{\pi}{12}$

②  $\frac{\pi}{12} = \frac{23}{r}$

$$r = 23 \cdot \frac{12}{\pi}$$

$$\boxed{r \approx 87.9 \text{ in}}$$

6. Find  $t$  if  $\sin t = -\frac{1}{2}$

$$\boxed{t = \frac{7\pi}{6}, \frac{11\pi}{6}}$$

7. If  $\tan \theta = 3$ , what is  $\cot(90^\circ - \theta)$ ?

$$\boxed{3}$$

8. if  $\cos t = -\frac{3}{4}$ , find  $\cos(-t)$  and  $\sec(-t)$ .

$$\boxed{\frac{-3}{4} \quad -\frac{4}{3}}$$

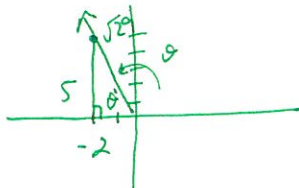
even reciprocal

9. if  $\cos t = \frac{4}{5}$ , find  $\cos(\pi-t)$  and  $\cos(\pi+t)$ .

$$\boxed{-\frac{4}{5} \quad -\frac{4}{5}}$$



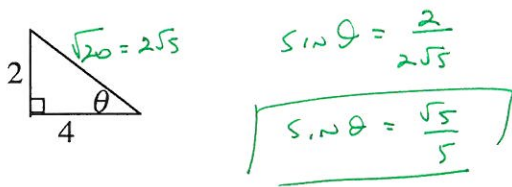
10. Point  $(-2,5)$  is on the terminal side of an angle in standard position. Find the exact value of  $\cos$ .



$$\cos \theta = \frac{-2}{\sqrt{29}}$$

$$\boxed{\cos \theta = \frac{-2\sqrt{29}}{29}}$$

11. Given the triangle, find  $\sin\theta$ .



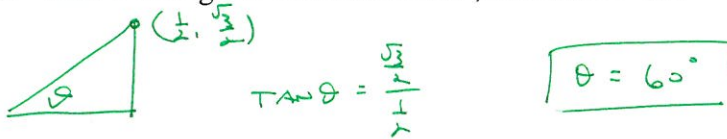
12. Find  $\theta$ , in degrees, for problem #11.

$$\sin \theta = \frac{\sqrt{5}}{5}$$

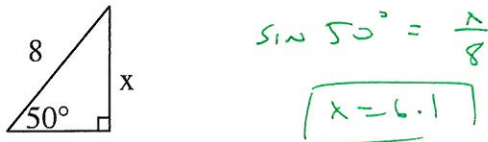
$$\theta = \sin^{-1}\left(\frac{\sqrt{5}}{5}\right)$$

$$\theta = 26.6^\circ$$

13. Find  $\theta$  in degrees where  $0 < \theta < 90^\circ$ , and  $\tan\theta = \sqrt{3}$ .



14. Solve for  $x$ .



15. Use trig identities to simplify each expression.

a)  $\cos\theta \tan\theta$

$$\cos\theta \cdot \frac{\sin\theta}{\cos\theta}$$

$$\sin\theta$$

b)  $(\sin\theta - 1)(\sin\theta + 1)$

$$\sin^2\theta - 1$$

$$-\cos^2\theta$$

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

$$\sin^2\theta - 1 = -\cos^2\theta$$

c)  $(\csc\theta - \cot\theta)(\csc\theta + \cot\theta)$

$$\csc^2\theta - \cot^2\theta$$

$$1$$

d)  $\sin\theta \sec\theta$

$$\sin\theta \cdot \frac{1}{\cos\theta}$$

$$\frac{\sin\theta}{\cos\theta}$$

$$\tan\theta$$