Name Mine Date

Practice 7.3: Trig Functions & The Unit Circle

1. Find the point on the unit circle that corresponds to the angle.

a. $\frac{\pi}{4}$ $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ b. $\frac{3\pi}{2}$ $(0,-1)$ c. $-\frac{4\pi}{3}$ $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ d. $\frac{11\pi}{6}$ $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

e. $30°$ $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ f. $135°$ $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ g. $300°$ $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$ h. $210°$ $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

2. Find the sine, cosine and tangent of the angle.

a. $\frac{5\pi}{4}$ $\sin\left(\frac{5\pi}{4}\right) = -\frac{\sqrt{2}}{2}$ $\cos\left(\frac{5\pi}{4}\right) = -\frac{\sqrt{2}}{2}$ $\tan(\ ) = 1$

b. $150°$ $\sin 150° = +1/2$ $\cos 150° = -\sqrt{3}/2$ $\tan 150° = -\sqrt{3}/3$

c. $\frac{3\pi}{2}$ $\sin(\ ) = -1$ $\cos(\ ) = 0$ $\tan(\ ) = \text{u}$

d. $330°$ $\sin(\ ) = -1/2$ $\cos(\ ) = \sqrt{3}/2$ $\tan(\ ) = -\sqrt{3}/3$

3. Find the value of all 6 trig functions for each angle.

a. $\frac{7\pi}{6}$ $\sin(\ ) = -\frac{1}{2}$ $\csc(\ ) = -2$ $\cos(\ ) = -\sqrt{3}/2$ $\sec(\ ) = -\frac{2\sqrt{3}}{3}$ $\tan(\ ) = \sqrt{3}/3$ $\cot(\ ) = \sqrt{3}$

b. $-240°$ $\sin(\ ) = \sqrt{3}/2$ $\csc(\ ) = \frac{2\sqrt{3}}{3}$ $\cos(\ ) = -1/2$ $\sec(\ ) = -2$ $\tan(\ ) = -\sqrt{3}$ $\cot(\ ) = -\frac{\sqrt{3}}{3}$

4. Use the period to help evaluate the following trig functions.

a. $\sin 3\pi = \sin\pi = 0$ b. $\cos(405°) = \cos 45° = \sqrt{2}/2$ c. $\tan\frac{25\pi}{6} = \tan \pi/6 = \sqrt{3}/3$ d. $\csc(-600°) = \csc -240° = \csc 120° = 1/\sin 120° = 1/\frac{\sqrt{3}}{2} = \frac{2\sqrt{3}}{3}$

Use the value of the given function to evaluate the remaining ones.

5. $\sin\theta = \frac{1}{3}$ a. $\sin -\theta = -\frac{1}{3}$ b. $\csc\theta = \frac{3}{1} = 3$

6. $\cos(-\theta) = \frac{2}{5}$ a. $\cos\theta = \frac{2}{5}$ b. $\sec\theta = \frac{5}{2}$

7. $\tan(\theta) = \frac{3}{4}$ a. $\tan -\theta = -\frac{3}{4}$ b. $\cot\theta = \frac{4}{3}$

Use the value of the given function to evaluate the remaining ones.

8. $\sin\theta = \frac{2}{3}$ ✳

a. $\sin(\pi - \theta) = \frac{2}{3}$

b. $\sin(\pi + \theta)$ ✳ $= -\frac{2}{3}$

9. $\cos\theta = \frac{3}{7}$ ✳

a. $\cos(\pi - \theta) = -\frac{3}{7}$

b. $\cos(\pi + \theta) = -\frac{3}{7}$ ✳

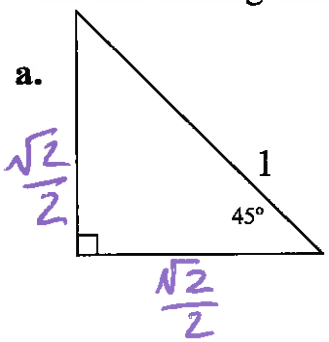
10. Use a calculator to evaluate the trig functions.

a. $\sin\frac{\pi}{4} = 0.707$ **b.** $\tan(180°) = 0$ **c.** $\cos(34.2°) = .83$ **d.** $\cot(1) = 0.642$

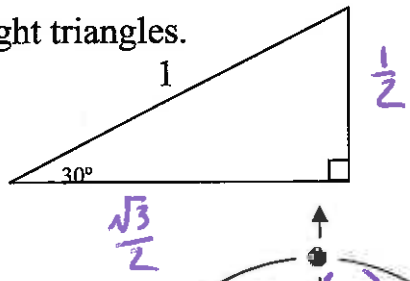
e. $\tan(110.5°) =$ -2.67 **f.** $\sec(54.9°) =$ 1.74 **g.** $\csc(0.8) =$ 1.39 **h.** $\sin(-\frac{5\pi}{3}) = 0.866$

11. Find the missing sides of the right triangles.

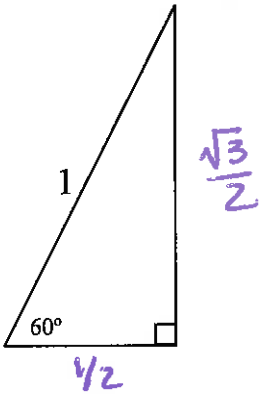
a.



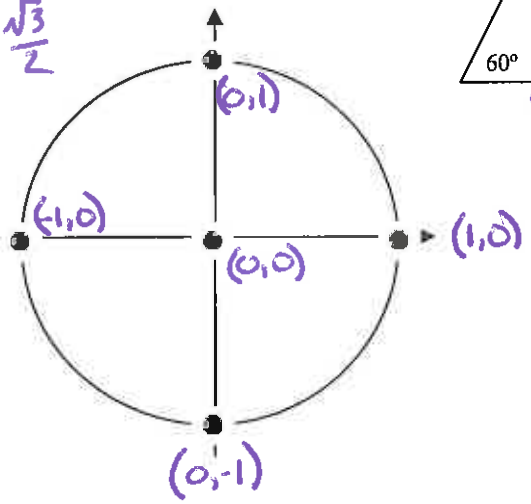
b.



c.



12. Find the points on the Unit Circle.



13. Find both the triangle and Unit Circle definition for all 6 trig functions.

a. $\sin\theta = \frac{O}{H} = y$

b. $\csc\theta = \frac{H}{O} = \frac{1}{y}$

c. $\cos\theta = \frac{A}{H} = x$

d. $\sec\theta = \frac{H}{A} = \frac{1}{x}$

e. $\tan\theta = \frac{O}{A} = \frac{y}{x}$

f. $\cot\theta = \frac{A}{O} = \frac{x}{y}$