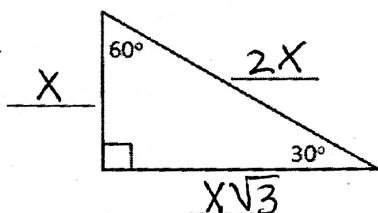


Evaluate Trigonometric Functions of Any Angle (13.1-13.3) Review
Advanced Algebra with Trigonometry, Glawe

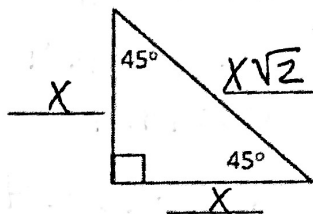
Name: Key Period: _____

Fill in the general missing sides of the special right triangles.

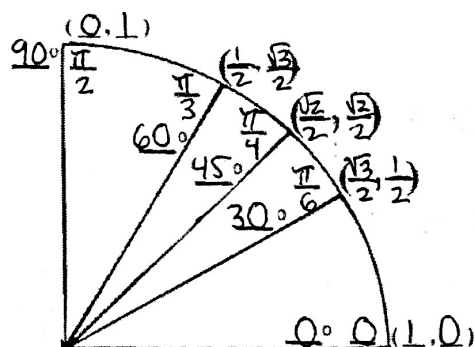
1)



2)



3) Fill in all of the missing pieces of Quadrant I on the unit circle (the degree, radian, and point).



4) What does SOH-CAH-TOA stand for?

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} \quad \tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

5) Fill in the blank:

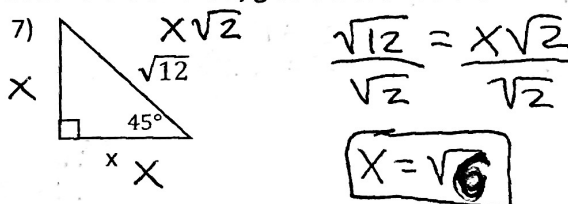
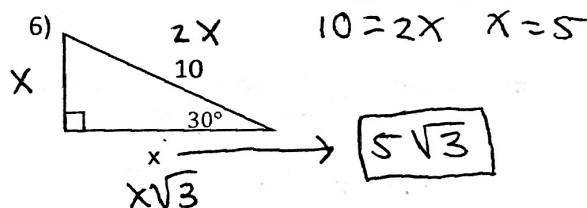
a) $\csc \theta = \frac{1}{\sin \theta}$

b) $\cot \theta = \frac{1}{\tan \theta}$

c) $\sec \theta = \frac{1}{\cos \theta}$

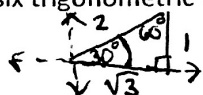
d) $\tan \theta = \frac{\sin \theta}{\cos \theta}$

Find the value of x for the right triangle shown. DO NOT USE A CALCULATOR, give exact solution.



Evaluate the six trigonometric functions of θ .

8) $\theta = \frac{\pi}{6}$

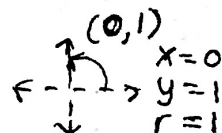


$$\sin \theta = \frac{1}{2} \quad \csc \theta = \frac{2}{1} = 2$$

$$\cos \theta = \frac{\sqrt{3}}{2} \quad \sec \theta = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$

$$\tan \theta = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3} \quad \cot \theta = \frac{\sqrt{3}}{1} = \sqrt{3}$$

9) $\theta = -270^\circ + 360^\circ = 90^\circ$



$$\sin \theta = 1 \quad \csc \theta = 1$$

$$\cos \theta = 0 \quad \sec \theta = \frac{1}{0} = \text{undefined}$$

$$\tan \theta = \frac{1}{0} = \text{undefined} \quad \cot \theta = \frac{0}{1} = 0$$

10) Find one positive and one negative angle that are coterminal with the angle $\frac{13\pi}{6}$.

Solutions must be in radians.

$$\frac{13\pi}{6} + 2\pi = \frac{13\pi}{6} + \frac{12\pi}{6} = \frac{25\pi}{6}$$

$$\frac{13\pi}{6} - 2\pi = \frac{13\pi}{6} - \frac{12\pi}{6} = \frac{\pi}{6}$$

or $-\frac{11\pi}{6}$

11) The sun casts a shadow of a man on the ground that is 5.45 feet long. The angle of elevation is 50° . What is the approximate height of the man?



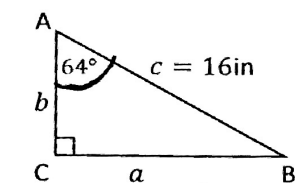
$$\tan 50^\circ = \frac{h}{5.45}$$

$$5.45 \tan 50^\circ = h$$

$$h \approx 6.5 \text{ feet}$$

SOH-CAH-TOA

12) Use a calculator to solve the right triangle ABC.
Round to the nearest tenths place, if necessary.



$$\sin 64 = \frac{a}{16}$$

$$a = 16 \sin 64$$

$$a \approx 14.4$$

$$\cos 64 = \frac{b}{16}$$

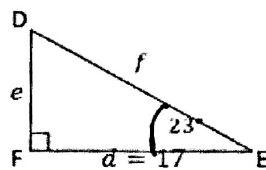
$$b = 16 \cos 64$$

$$b \approx 7.0$$

$$180 - 90 - 64 = 26$$

$$a = 14.4 \quad b = 7.0 \quad B = 26^\circ$$

13) Use a calculator to solve the right triangle DEF.
Round to the nearest tenths place, if necessary.



$$\cos 23 = \frac{17}{f}$$

$$f \cos 23 = 17$$

$$f = \frac{17}{\cos 23} \quad f \approx 18.5$$

$$\tan 23 = \frac{e}{17}$$

$$180 - 90 - 23 = 67$$

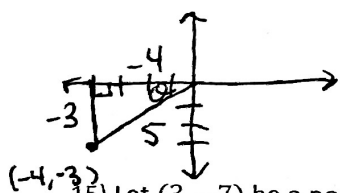
$$e = 17 \tan 23$$

$$= 6.7$$

$$e \approx 7.2$$

$$e = 7.2 \quad f = 18.5 \quad D = 67^\circ$$

14) Let $(-4, -3)$ be a point on the terminal side of an angle θ in standard position. Evaluate $\cot \theta$.



$$(-3)^2 + (-4)^2 = r^2$$

$$9 + 16 = r^2$$

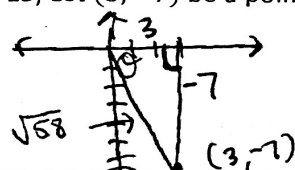
$$25 = r^2$$

$$r = 5$$

$$\tan \theta = \frac{-3}{-4} = \frac{3}{4}$$

$$\cot \theta = \frac{4}{3}$$

15) Let $(3, -7)$ be a point on the terminal side of an angle θ in standard position. Evaluate $\sin \theta$.



$$(-7)^2 + 3^2 = r^2$$

$$49 + 9 = r^2$$

$$58 = r^2$$

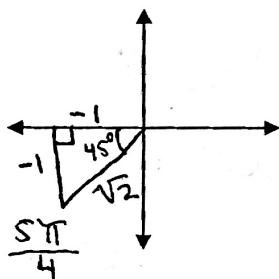
$$r = \sqrt{58}$$

$$\sin \theta = \frac{-7}{\sqrt{58}} = \frac{-7\sqrt{58}}{58}$$

Sketch the right triangle using the reference angle, and evaluate the function. * can also get exact solution if you know unit circle

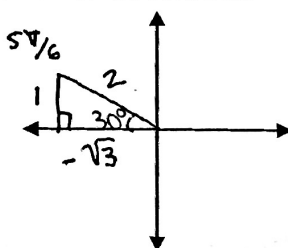
16) $\sin \frac{5\pi}{4}$

$$\frac{-1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{-\sqrt{2}}{2}$$



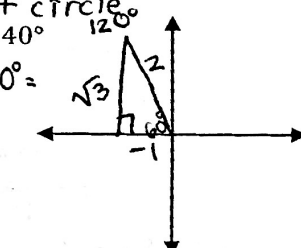
17) $\cos \frac{5\pi}{6}$

$$\frac{-\sqrt{3}}{2}$$



18) $\cos -240^\circ$

$$-240^\circ + 360^\circ = 120^\circ$$

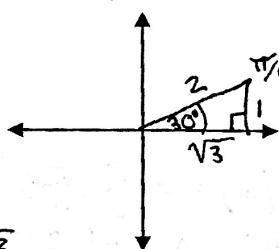


$$\frac{-1}{2}$$

19) $\tan -\frac{11\pi}{6}$

$$\frac{-11\pi}{6} + 2\pi = \frac{-11\pi}{6} + \frac{12\pi}{6} = \frac{\pi}{6}$$

$$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

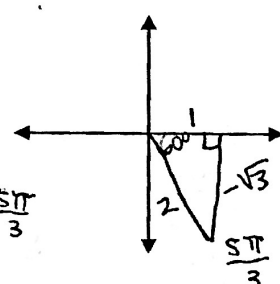


20) $\sin \frac{17\pi}{3}$

$$\frac{17\pi}{3} - 2\pi = \frac{17\pi}{3} - \frac{6\pi}{3} = \frac{11\pi}{3}$$

$$\frac{11\pi}{3} - \frac{6\pi}{3} = \frac{5\pi}{3}$$

$$\frac{-\sqrt{3}}{2}$$



21) $\tan 450^\circ$

$$450^\circ - 360^\circ = 90^\circ$$

$$\tan \theta = \frac{y}{x} = \frac{1}{0}$$

undefined

