

## Unit 4 Test C Practice Test

Name \_\_\_\_\_

Find the exact value of the function without using a calculator.

$$1. \tan \frac{14\pi}{6} = \tan \frac{\pi}{3} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$

$$2. \cos 600^\circ = \cos 240^\circ = -\frac{1}{2}$$

$$\sin 180 = 0$$

$$3. \sin \frac{19\pi}{4} = \sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2}$$

$$4. \csc 540^\circ = \csc 180^\circ = \text{undefined}$$

$$\cos 330^\circ = \frac{\sqrt{3}}{2}$$

$$5. \sec (-30)^\circ = \sec 330^\circ = \frac{2}{\sqrt{3}}$$

$$6. \cot \frac{-\pi}{3} = \cot \frac{5\pi}{3} = \frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$$

$$7. \cos (-210)^\circ = \cos 150^\circ = -\frac{\sqrt{3}}{2}$$

$$8. \sin \frac{-4\pi}{3} = \sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}$$

Find the exact value of the expression. Give the answer in both degrees and radians.

(Half Circles)  
sin/tan 1<sup>st</sup>, 4<sup>th</sup>

1.  $\sin^{-1}\frac{1}{2} = 30^\circ, \frac{\pi}{6}$



2.  $\cos^{-1}\frac{-\sqrt{3}}{2} = 150^\circ, \frac{2\pi}{3}$

cos 1<sup>st</sup>/2<sup>nd</sup>



3.  $\tan^{-1}(1) = 45^\circ, \frac{\pi}{4}$

4.  $\tan^{-1}\left(\frac{-1}{\sqrt{3}}\right) = -30^\circ, -\frac{\pi}{6}$

5.  $\cos^{-1}\left(\frac{1}{2}\right) = 60^\circ, \frac{\pi}{3}$

6.  $\sin^{-1}\left(\frac{-\sqrt{3}}{2}\right) = -60^\circ, -\frac{\pi}{3}$

Solve each equation between  $0 \leq \theta < 360$  or  $0 \leq \theta < 2\pi$

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

9.  $\sqrt{2} \sin \theta - 1 = 0$

$$\sqrt{2} \sin \theta = 1$$

$$\sin \theta = \frac{1}{\sqrt{2}}$$

$$\sin \theta = \frac{\sqrt{2}}{2}$$

$$\theta = 45, 135$$

$$\frac{\pi}{4}, \frac{3\pi}{4}$$

10.  $\tan^2 \theta + 2 \tan \theta + 1 = 0$

$$(\tan \theta + 1)(\tan \theta + 1)$$

$$\tan \theta + 1 = 0 \quad \tan \theta + 1 = 0$$

$$\tan \theta = -1 \quad \tan \theta = -1$$

$$\theta = 135, 315$$

$$\frac{3\pi}{4}, \frac{7\pi}{4}$$

12.  $\sqrt{3} \tan(\theta) + 1 = 2$   
 $\quad \quad \quad -1 \quad -1$

$$\sqrt{3} \tan \theta = 1$$

$$\tan \theta = \frac{1}{\sqrt{3}}$$

$$\theta = 30^\circ, 210^\circ$$

$$\frac{\pi}{6}, \frac{7\pi}{6}$$

11.  $-2 \sin \theta = 1$

$$\sin \theta = -\frac{1}{2}$$

$$\theta = 210^\circ, 330^\circ$$

$$\frac{7\pi}{6}, \frac{11\pi}{6}$$

$$\cos \theta = \frac{1}{2}$$

$$\theta = 60^\circ, 300^\circ$$

13.  $\cos\left(\theta + \frac{\pi}{6}\right) = \frac{1}{2}$

$$\theta + 30 = 60$$

$$\theta + 30 = 300$$

$$\cos(\theta + 30) = \frac{1}{2}$$

$$\theta + 30 = 60$$

$$\theta + 30 = 300$$

$$\theta = 30$$

$$\theta = 270$$

$$\frac{\pi}{6}$$

$$\frac{3\pi}{2}$$

1. Given that  $\csc \theta = \frac{\sqrt{6}}{2}$ , use definitions or identities to find the exact value of the remaining five trigonometric functions of the acute angle  $\theta$ .

$$\sin \theta = \frac{2}{\sqrt{6}}$$

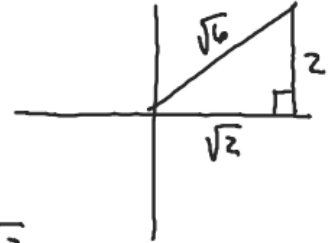
$$\cos \theta = \frac{\sqrt{2}}{\sqrt{6}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\tan \theta = \frac{2}{\sqrt{2}}$$

$$\csc \theta = \frac{\sqrt{6}}{2}$$

$$\sec \theta = \frac{\sqrt{6}}{\sqrt{2}} = \sqrt{3}$$

$$\cot \theta = \frac{\sqrt{2}}{2}$$



2. Find the six trigonometric functions given the point  $(-7, -9)$

$$\sin \theta = \frac{-9}{\sqrt{130}}$$

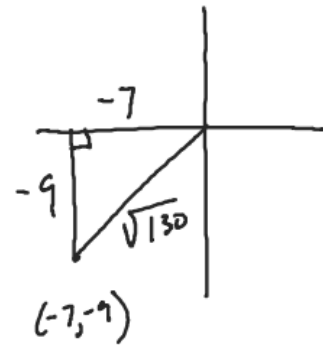
$$\cos \theta = \frac{-7}{\sqrt{130}}$$

$$\tan \theta = \frac{9}{7}$$

$$\csc \theta = \frac{-\sqrt{130}}{9}$$

$$\sec \theta = \frac{\sqrt{130}}{-7}$$

$$\cot \theta = \frac{7}{9}$$

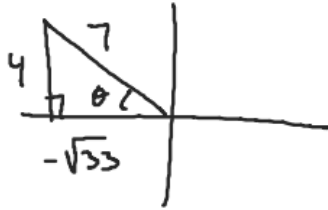


$$(-7)^2 + (-9)^2 = c^2$$

Given the following information, find the exact value of the trigonometric function

$$7^2 - 4^2 = a^2$$

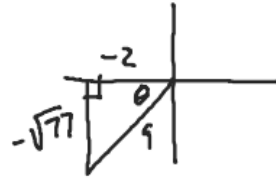
3.  $\csc \theta = \frac{7}{4}$  and  $\tan \theta < 0$  find  $\cos \theta$



$$\cos \theta = -\frac{\sqrt{33}}{7}$$

4.  $\sec \theta = \frac{9}{-2}$  and  $\tan \theta > 0$  find  $\cot \theta$

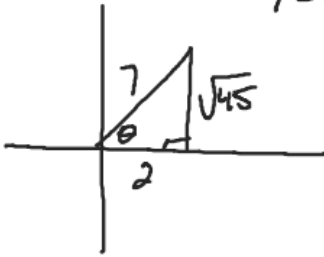
$$9^2 - (-2)^2 =$$



$$\cot \theta = \frac{2}{\sqrt{77}}$$

5.  $\cos \theta = \frac{2}{7}$  and  $\cot > 0$  find  $\tan \theta$

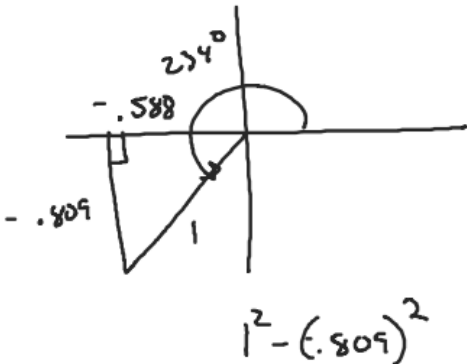
$$7^2 - (2)^2 =$$



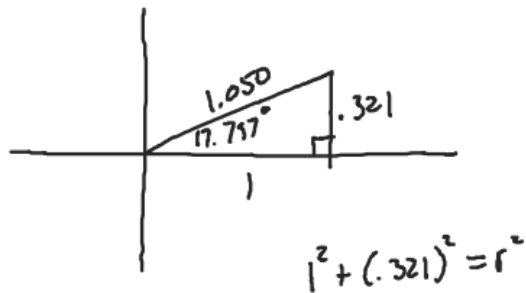
$$\tan \theta = \frac{\sqrt{45}}{2}$$

Use a calculator to find each value. Round your answer to 3 decimal places then draw the triangle that corresponds to value given to you by the calculator.

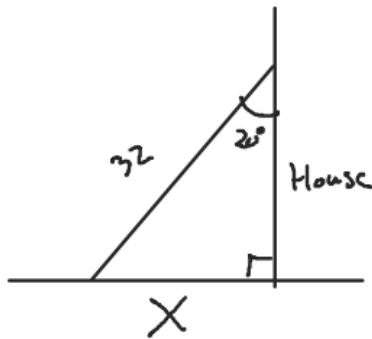
6.  $\sin 234^\circ \approx -.809$



7.  $\tan^{-1}(.321) = 17.797^\circ$



8. A 32-foot ladder is leaning against the side of a building. If the ladder makes an angle of  $20^\circ$  with the side of the building, how far is the bottom of the ladder from the base of the building? Round your answer to the hundredths place.



$$\sin 20^\circ = \frac{X}{32}$$

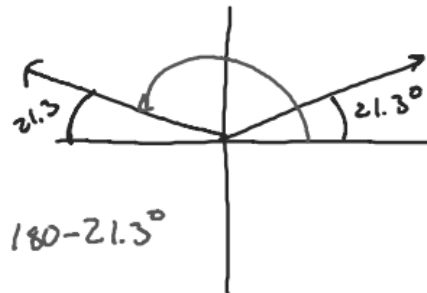
$$X = 32 \sin 20$$

$$X = 10.94 \text{ ft}$$

(2)

Solve the equation between  $0 \leq \theta < 360$ . Round your answers to the nearest tenth.

9.  $\sin \theta = .364 = 21.3^\circ$   
 $158.7$



Solve the equation between  $0 \leq \theta < 360$  by finding the exact angles.

10.  $\cos 2\theta = \frac{\sqrt{3}}{2}$

$$\frac{2\theta}{2} = \frac{30^\circ}{2} + \frac{360k}{2}$$

$$\theta = 15^\circ \pm 180k$$

$$15^\circ, 195^\circ$$

$$\frac{2\theta}{2} = \frac{330^\circ}{2} \pm \frac{360^\circ}{2}k$$

$$\theta = 165^\circ \pm 180^\circ k$$

$$165^\circ, 345^\circ$$