Unit 4 Test C Practice Test   Name __KEY__

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

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

2. $\cos 600° = \cos 240° = -\dfrac{1}{2}$

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

4. $\csc 540° = \csc 180° = \text{Undefined}$

5. $\sec(-30)° = \sec 330° = \dfrac{2}{\sqrt{3}} = \dfrac{2\sqrt{3}}{3}$

6. $\cot\dfrac{-\pi}{3} = -\dfrac{1}{\sqrt{3}} = -\dfrac{\sqrt{3}}{3}$

7. $\cos(-210)° = \cos 150°$
    $-\dfrac{\sqrt{3}}{2}$

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

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

1. $\sin^{-1}\dfrac{1}{2} =$ $30°$ $\dfrac{\pi}{6}$

2. $\cos^{-1}\dfrac{-\sqrt{3}}{2} =$ $150°,$ $\dfrac{5\pi}{6}$

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

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

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

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

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

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

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

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

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

$$\theta = 45°, \frac{\pi}{4}$$

$$\theta = 135°, \frac{3\pi}{4}$$

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

$$(\tan\theta + 1)(\tan\theta + 1) = 0$$

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

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

$$\theta = 135°, \ 315°$$

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

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

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

$$\theta = 216°, \ 330°$$

$$\theta = \frac{7\pi}{6} \quad \frac{11\pi}{6}$$

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

$$-1 \ -1$$

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

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

$$\theta = 30°, \ 210°$$

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

13. $\quad \cos\left(\theta + \frac{\pi}{6}\right) = \frac{1}{2}$
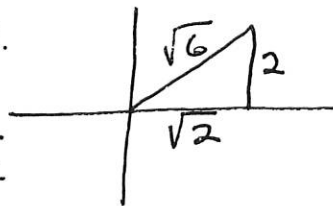
$$\cos(\theta + 30°) = \frac{1}{2}$$

$$\theta + 30° = 60° \qquad \theta + 30 = 300°$$

$$\theta = 30° \qquad \theta = 270°$$

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

$\sin \theta = \dfrac{2}{\sqrt{6}} = \dfrac{2\sqrt{6}}{6} = \dfrac{\sqrt{6}}{3}$

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

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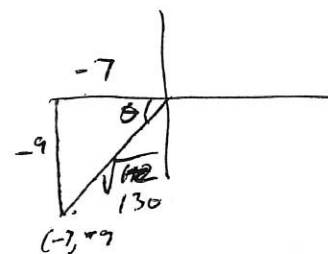
$\sec \theta = \sqrt{3}$

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

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

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

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

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

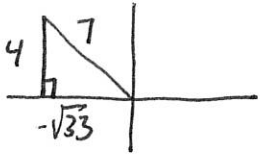$\cos \theta = \dfrac{-7}{\sqrt{130}} = \dfrac{-7\sqrt{130}}{130}$

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

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

$\cot \theta = \dfrac{7}{9}$
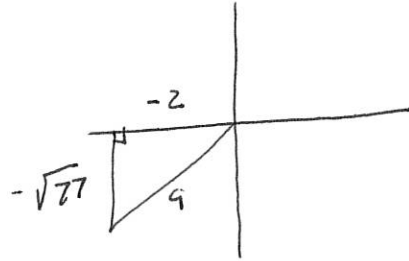
Given the following information, find the exact value of the trigonometric function

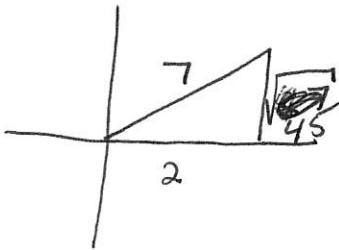3. $\csc \theta = \dfrac{7}{4}$ and $\tan \theta < 0$ find $\cos \theta$

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

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

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

5. $\cos \theta = \dfrac{2}{7}$ and and $\cot > 0$ find $\tan \theta$
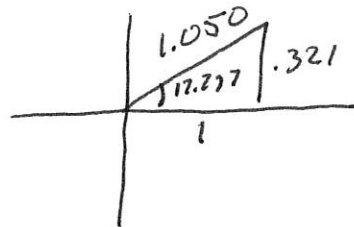
$\tan \theta = \dfrac{\sqrt{45}}{2}$

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.
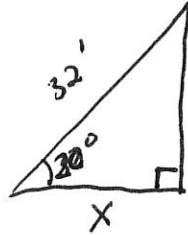
6. $\sin 234° = -.809$

7. $\tan^{-1}(.321) = 17.797°$

8. A 32-foot ladder is leaning against the side of a building. If the ladder makes an angle of 20° 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.

$$\cos 20° = \frac{x}{32}$$
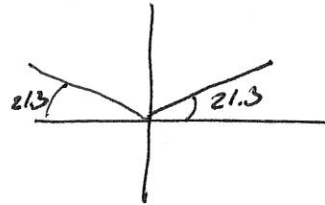
$$x = 32 \cos 20°$$

$$x = 30.07 \text{ ft}$$

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

9. $\sin \theta = .364$

$$\sin^{-1}(.364) = \theta$$

$$\theta = 21.3°$$

$$180 - 21.3 = 158.7°$$

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

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

$$2\theta = 30° \qquad 2\theta = 330° \qquad 2\theta = 390° \qquad 2\theta = 690°$$

$$\theta = 15° \qquad \theta = 165° \qquad \theta = 195° \qquad \theta = 345°$$