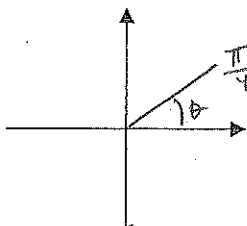


4.1-4.4 Review | Worksheet

Note: You must show all work for credit, including calculator problems!!

1. Given $\theta = -\frac{23\pi}{4}$, make a sketch and list (a) a positive and (b) a negative coterminal angle.

Answers must be in radians!



$$-\frac{23\pi}{4} + n \frac{8\pi}{4}$$

$$-\frac{23\pi}{4} + \frac{24\pi}{4} = \frac{\pi}{4}$$

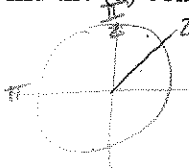
$$-\frac{8\pi}{4}$$

$$-\frac{7\pi}{4}$$

a. $\frac{\pi}{4}$

b. $-\frac{7\pi}{4}$

2. Find the (a) complement and (b) supplement for: $\theta = \frac{2\pi}{7}$



C: $\frac{\pi}{2} - \frac{2\pi}{7}$

S: $\pi - \frac{2\pi}{7}$

$$\frac{7\pi}{14} - \frac{4\pi}{14} = \frac{3\pi}{14}$$

$$\frac{7\pi}{7} - \frac{2\pi}{7} = \frac{5\pi}{7}$$

a. $\frac{3\pi}{14}$

b. $\frac{5\pi}{7}$

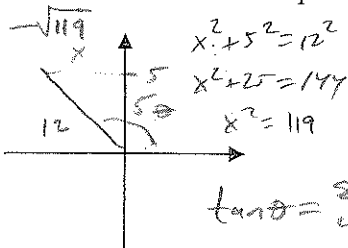
3. Convert to radians: $115^\circ \left(\frac{\pi}{180}\right) = \frac{115\pi}{180} = \frac{23\pi}{36}$

$$\frac{23\pi}{36} \approx 2.007$$

4. Convert to degrees: $\frac{11\pi}{9} \cdot \frac{180^\circ}{\pi} = 220^\circ$

220°

5. Given $\sin \theta = \frac{5}{12}$ and $\cos \theta < 0$, find the *exact values* of the other 5 trig functions. You must draw a sketch in the correct quadrant!!



$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{5/12}{-\sqrt{119}/12} = \frac{-5}{\sqrt{119}}$$

$$\cos \theta = \frac{-\sqrt{119}}{12}$$

$$\tan \theta = \frac{-5\sqrt{119}}{119}$$

$$\csc \theta = \frac{12}{5}$$

$$\sec \theta = \frac{-12\sqrt{119}}{119}$$

$$\cot \theta = \frac{-\sqrt{119}}{5}$$

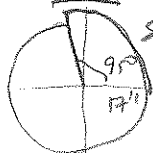
6. Find the *exact value* (do not use calculator!) of the following trig functions:



a. $\csc\left(\frac{7\pi}{4}\right) = \frac{1}{\sin\left(\frac{7\pi}{4}\right)} = \frac{1}{-\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\sqrt{2}$

b. $\cot\left(\frac{3\pi}{2}\right) = \frac{\cos\left(\frac{3\pi}{2}\right)}{\sin\left(\frac{3\pi}{2}\right)} = \frac{0}{-1} = 0$

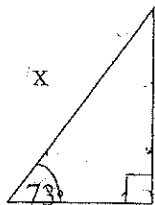
7. Find the exact length of the arc intercepted by the central angle 95° on a circle with radius = 17 in.



$$s = r\theta = 17 \cdot \frac{95^\circ}{180} = \frac{1615\pi}{180} = \frac{323\pi}{36} \text{ in}$$

$\frac{323\pi}{36} \text{ in}$

8. Solve for x to two decimal places.



$$\cos 73^\circ = \frac{52}{x}$$

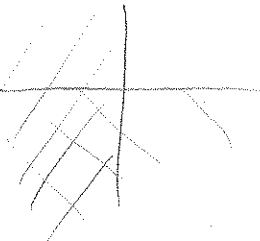
$$x = \frac{52}{\cos 73^\circ} = 177.86$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

177.86

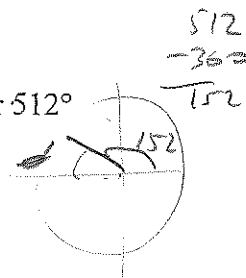
9. If $\sec \theta < 0$ and $\csc \theta < 0$, in which quadrant does θ lie?

III

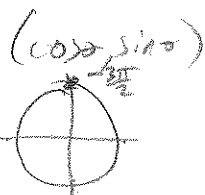


10. Find the reference angle for 512°

28°

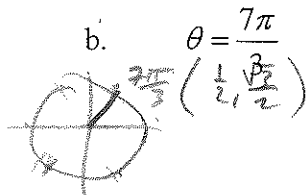


11. Find the point (x, y) on the unit circle that corresponds to the angle θ .



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

a. $(0, 1)$



b. $\theta = \frac{7\pi}{3}$

b. $(\frac{1}{2}, \frac{\sqrt{3}}{2})$

12. Use a calculator to evaluate $\sec 21^\circ 49'$: (round your result to four decimal places) 1.0771

$$21^\circ 49' = 21.8166... \quad \sec 21.8166...$$

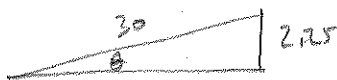
13. Find two values of θ to the nearest degree, $0^\circ \leq \theta < 360^\circ$, that satisfy $\cos \theta = -0.4695$

118° and 242°

$$\theta = \cos^{-1}(-0.4695) = 118^\circ$$



14. A ramp 30 feet in length rises to a loading platform that is 2.25 feet off the ground. Find the angle of elevation of the ramp to the nearest degree.

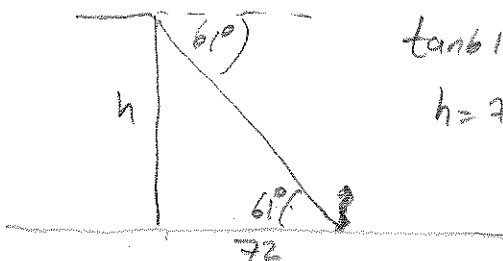


$$\sin \theta = \frac{2.25}{30}$$

$$\theta = \sin^{-1}\left(\frac{2.25}{30}\right)$$

4°

15. An angle of depression from the top of a building to the base of a statue 72 feet from the base of the building is 61° . Determine the height of the building to the nearest foot. Make a sketch, label all parts, and show your equations.



$$\tan 61^\circ = \frac{h}{72}$$

$$h = 72 \tan 61^\circ = 129.89$$

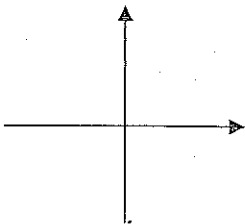
130 ft

4.1-4.4 Review ! Worksheet

Note: You must show all work for credit, including calculator problems!!

1. Given $\theta = -\frac{23\pi}{4}$, make a sketch and list (a) a positive and (b) a negative coterminal angle.

Answers must be in radians!



a. _____

b. _____

2. Find the (a) complement and (b) supplement for: $\theta = \frac{2\pi}{7}$

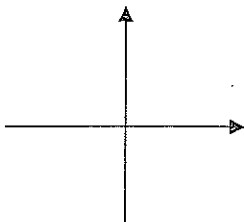
a. _____

b. _____

3. Convert to radians: 115°

4. Convert to degrees: $\frac{11\pi}{9}$

5. Given $\sin \theta = \frac{5}{12}$ and $\cos \theta < 0$, find the *exact values* of the other 5 trig functions. You must draw a sketch in the correct quadrant!!



$\csc \theta =$ _____

$\cos \theta =$ _____

$\sec \theta =$ _____

$\tan \theta =$ _____

$\cot \theta =$ _____

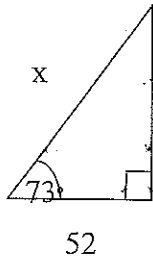
6. Find the *exact value* (do not use calculator!) of the following trig functions:

a. $\csc\left(\frac{7\pi}{4}\right) =$ _____

b. $\cot\left(\frac{3\pi}{2}\right) =$ _____

7. Find the exact length of the arc intercepted by the central angle 95° on a circle with radius = 17 in.

8. Solve for x to two decimal places.



9. If $\sec \theta < 0$ and $\csc \theta < 0$,
in which quadrant does θ lie?

10. Find the reference angle for 512°

11. Find the point (x, y) on the unit circle that corresponds to the angle θ .

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

b. $\theta = \frac{7\pi}{3}$

a. _____

b. _____

12. Use a calculator to evaluate $\sec 21^\circ 49'$: (round your result to four decimal places) _____

13. Find two values of θ to the nearest degree, $0^\circ \leq \theta < 360^\circ$, that satisfy $\cos \theta = -.4695$

_____ and _____

4. A ramp 30 feet in length rises to a loading platform that is 2.25 feet off the ground. Find the angle of elevation of the ramp to the nearest degree.

15. An angle of depression from the top of a building to the base of a statue 72 feet from the base of the building is 61° . Determine the height of the building to the nearest foot. Make a sketch, label all parts, and show your equations.
