

1. Convert  $184^\circ$  to radian measure.  $\frac{184 \cdot \pi}{180} = \frac{46\pi}{45}$

2. Convert  $\frac{7\pi}{10}$  to degree measure.  $\frac{7\pi}{10} \cdot \frac{180}{\pi} = 126^\circ$

3. State the reference angle for  $1920^\circ$ .

$60^\circ$

4. State a positive coterminal angle of  $\frac{43\pi}{6}$ .  $\frac{31\pi}{6}$  or  $\frac{19\pi}{6}$  or  $\frac{7\pi}{6}$  or  $\frac{55\pi}{6}$  ...

5. State a negative coterminal angle of  $1020^\circ$ .  $-60^\circ$

6. Evaluate each of the following.

a.  $\cos^{-1}\left(-\frac{1}{2}\right) = 120^\circ$  or  $\frac{2\pi}{3}$

b.  $\arctan(-1) = -45^\circ$  or  $-\frac{\pi}{4}$

c.  $\sin^{-1}\left(-\frac{1}{2}\right) = -30^\circ$  or  $-\frac{\pi}{6}$

Given the function  $h(x) = -7 \cos\left(\frac{1}{3}x - \frac{\pi}{4}\right) - 3$ , state each of the following characteristics.

7. phase shift right  $\frac{3\pi}{4}$

8. period  $6\pi$

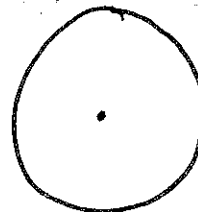
9. amplitude 7

10. sinusoidal axis  $y = -3$

11. Evaluate.  $\cos\left(\sin^{-1}\left(-\frac{1}{2}\right)\right) = \frac{\sqrt{3}}{2}$

12. Evaluate.  $\sin\left(\arctan(-\sqrt{3})\right) = -\frac{\sqrt{3}}{2}$

The diameter of a Ferris wheel is 176 feet, and one complete revolution takes 11 minutes. The bottom of the wheel is 10 feet above the ground. Each passenger gets on the ride at the bottom of the wheel.



13. What is the highest distance above the ground that each passenger will attain during the ride?

186 ft.

14. State an equation that will give each rider's height above the ground at any time during the ride.

$y = -88 \cos\left(\frac{2\pi}{11}x\right) + 98$

15. The equation  $D(t) = 8 \cos\left(\frac{\pi}{8}t\right) + 13$  models water depth in meters in a seaport with  $t = 0$  representing 10:00 PM.

a. What will the water depth be at 3 PM?

$$20.39 \text{ ft}$$

b. At what time will the water depth first be 8 meters? State your answer in hours and minutes, and be sure to designate AM or PM.

$$3:43 \text{ A.M.}$$

16. Determine the area of a triangle with side lengths  $a = 13$ ,  $b = 16$ , and  $c = 9$ .

$$58.48$$

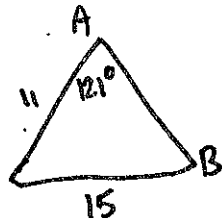
$$s = 19$$

$$A = \sqrt{19(6)(3)(10)}$$

17. Determine the area of a triangle given  $a = 90$ ,  $b = 28$ , and  $C = 50^\circ$ .

$$A = \frac{1}{2} \cdot 90 \cdot 28 \cdot \sin 50 = 965.22$$

18. Given  $A = 121^\circ$ ,  $a = 15$ , and  $b = 11$ , determine the measure of angle  $B$ .



$$\frac{\sin 121^\circ}{15} = \frac{\sin B}{11}$$

$$\angle B = 38.95^\circ$$

19. Given  $a = 14$ ,  $b = 17$ , and  $c = 7$ , determine the measure of angle  $A$ .

$$14^2 = 17^2 + 7^2 - 2(17)(7)\cos A$$

$$A = \cos^{-1} \frac{17^2 + 7^2 - 14^2}{2(17)(7)}$$

$$= 53.37$$