Lesson 13 Practice Problems

1. For each trigonometric function, indicate the amplitude and midline.

   a. $y = 2\sin(\theta)$

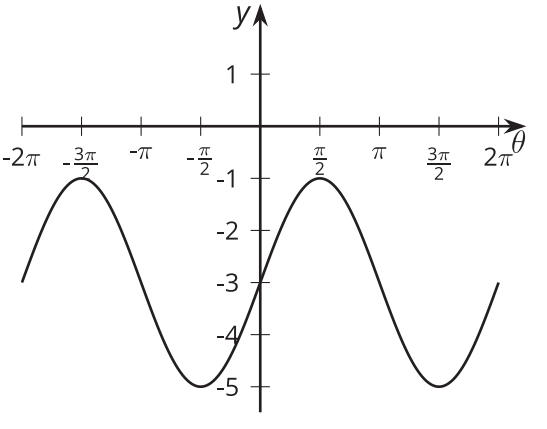
   b. $y = \cos(\theta) - 5$

   c. $y = 1.4\sin(\theta) + 3.5$

2. Here is a graph of the equation $y = 2\sin(\theta) - 3$.

   a. Indicate the midline on the graph.

   b. Use the graph to find the amplitude of this sine equation.



3. Select **all** trigonometric functions with an amplitude of 3.

   A. $y = 3\sin(\theta) - 1$

   B. $y = \sin(\theta) + 3$

   C. $y = 3\cos(\theta) + 2$

   D. $y = \cos(\theta) - 3$

   E. $y = 3\sin(\theta)$

   F. $y = \cos(\theta - 3)$

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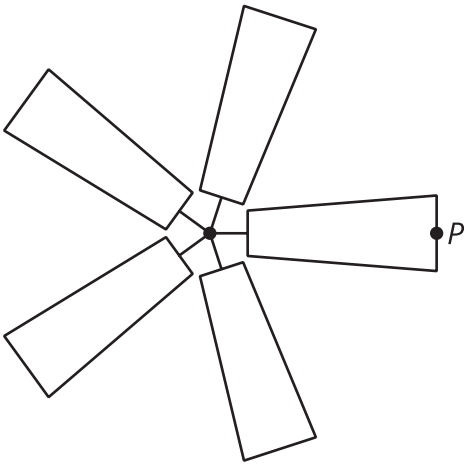
4. The center of a windmill is 20 feet off the ground and the blades are 10 feet long.



rotation angle of windmill	vertical position of P in feet
$\frac{\pi}{6}$	
$\frac{\pi}{3}$	
$\frac{\pi}{2}$	
π	
$\frac{3\pi}{2}$	

a. Fill out the table showing the vertical position of P after the windmill has rotated through the given angle.

b. Write an equation for the function f that describes the relationship between the angle of rotation θ and the vertical position of the point P, $f(\theta)$, in feet.

5. The measure of angle θ, in radians, satisfies $\sin(\theta) < 0$. If θ is between 0 and 2π what can you say about the measure of θ?

(From Unit 6, Lesson 9.)

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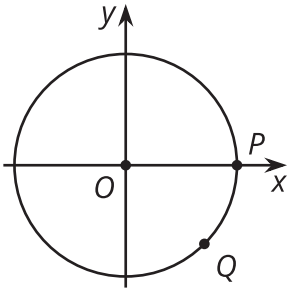
6. Which rotations, with center O, take P to Q? Select **all** that apply.



A. $\frac{3\pi}{4}$ radians

B. $\frac{15\pi}{4}$ radians

C. $\frac{7\pi}{4}$ radians

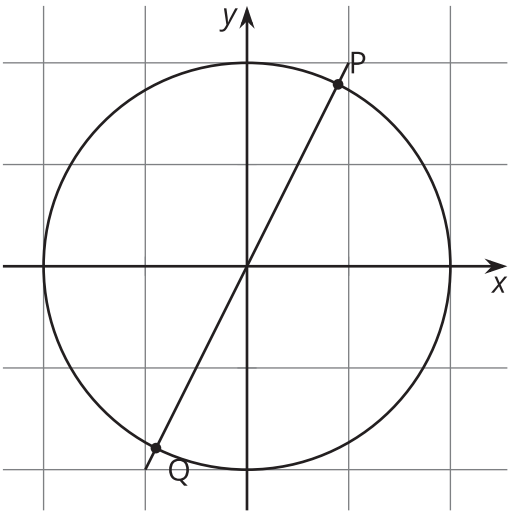
D. $\frac{11\pi}{4}$ radians

E. $\frac{23\pi}{4}$ radians

(From Unit 6, Lesson 10.)

7. The picture shows two points P and Q on the unit circle.

Explain why the tangent of P and Q is 2.



(From Unit 6, Lesson 12.)

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