### Lesson 13 Practice Problems

1. For each trigonometric function, indicate the amplitude and midline.
	1. $y=2sin\left(θ\right)$
	2. $y=cos\left(θ\right)−5$
	3. $y=1.4sin\left(θ\right)+3.5$
2. Here is a graph of the equation $y=2sin\left(θ\right)−3$.
	1. Indicate the midline on the graph.
	2. Use the graph to find the amplitude of this sine equation.
* 
1. Select **all** trigonometric functions with an amplitude of 3.
	1. $y=3sin\left(θ\right)−1$
	2. $y=sin\left(θ\right)+3$
	3. $y=3cos\left(θ\right)+2$
	4. $y=cos\left(θ\right)−3$
	5. $y=3sin\left(θ\right)$
	6. $y=cos\left(θ−3\right)$
2. The center of a windmill is 20 feet off the ground and the blades are 10 feet long.
* 
* ​​​​​​

| * rotation angleof windmill
 | * vertical positionof $P$ in feet
 |
| --- | --- |
| * $\frac{π}{6}$
 | *
 |
| * $\frac{π}{3}$
 | *
 |
| * $\frac{π}{2}$
 | *
 |
| * $π$
 | *
 |
| * $\frac{3π}{2}$
 | *
 |

* 1. Fill out the table showing the vertical position of $P$ after the windmill has rotated through the given angle.
	2. Write an equation for the function $f$ that describes the relationship between the angle of rotation $θ$ and the vertical position of the point $P$, $f\left(θ\right)$, in feet.
1. The measure of angle $θ$, in radians, satisfies $sin\left(θ\right)<0$. If $θ$ is between 0 and $2π$ what can you say about the measure of $θ$?
* (From Unit 6, Lesson 9.)
1. Which rotations, with center $O$, take $P$ to $Q$? Select **all** that apply.
* 
	1. $\frac{3π}{4}$ radians
	2. $\frac{15π}{4}$ radians
	3. $\frac{7π}{4}$ radians
	4. $\frac{11π}{4}$ radians
	5. $\frac{23π}{4}$ radians
* (From Unit 6, Lesson 10.)
1. 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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