### Lesson 15 Practice Problems

1. Here is a graph of a trigonometric function. Which equation could define this function?
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	1. $y=1.5sin\left(x\right)−4$
	2. $y=1.5cos\left(x\right)−4$
	3. $y=-4sin\left(1.5x\right)$
	4. $y=-4cos\left(1.5x\right)$
1. Select **all** the functions that have period $π$.
	1. $y=cos\left(\frac{x}{2}\right)$
	2. $y=sin\left(\frac{x}{2}\right)$
	3. $y=cos\left(x\right)$
	4. $y=cos\left(2x\right)$
	5. $y=sin\left(2x\right)$
	6. Sketch a graph of $a\left(θ\right)=cos\left(3θ\right)$.
	7. Compare the graph of $a$ to the graph of $b\left(θ\right)=cos\left(θ\right)$. How are the two graphs alike? How are they different?
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1. The functions $f$ and $g$ are given by $f\left(x\right)=cos\left(x\right)$ and $g\left(x\right)=cos\left(5x\right)$. How are the graphs of $f$ and $g$ related?
2. Here is a point at the tip of a windmill blade. The center of the windmill is 6 feet off the ground and the blades are 1.5 feet long.
* Write an equation giving the height $h$ of the point $P$ after the windmill blade rotates by an angle of $a$. Point $P$ is currently rotated $\frac{π}{4}$ radians from the point directly to the right of the center of the windmill.
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* (From Unit 6, Lesson 14.)
1. The coordinates of $P$ are $\left(1,0\right)$.
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	1. If the wheel makes a $\frac{1}{3}$ rotation counterclockwise around its center, what radian angle does $P$ rotate through?
	2. If the wheel makes a $1\frac{1}{4}$ rotation counterclockwise around its center, what radian angle does $P$ rotate through?
* (From Unit 6, Lesson 3.)
1. A Ferris wheel has a radius of 95 feet and its center is 105 feet above the ground. Which statement is true about a point on the Ferris wheel as it goes around in a circle?
	1. It is 85 feet off the ground once in quadrant 1 and once in quadrant 2.
	2. It is is 85 feet off the ground once in quadrant 2 and once in quadrant 3.
	3. It is 85 feet off the ground once in quadrant 3 and once in quadrant 4.
	4. It is 85 feet off the ground once in quadrant 4 and once in quadrant 1.
* (From Unit 6, Lesson 7.)



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