### Lesson 9 Practice Problems

1. Which statement is *not* true for the function $f$ given by $f\left(θ\right)=sin\left(θ\right)$, for values of $θ$ between 0 and $2π$?
	1. The outputs of the function range from -1 to 1.
	2. $sinθ=1$ only when $θ=\frac{π}{2}$
	3. $sinθ=0$ only when $θ=0$
	4. $sinθ>0$ for $0<θ<π$
2. Angle $θ$, measured in radians, satisfies $cos\left(θ\right)=0$. What could the value of $θ$ be? Select **all** that apply.
	1. 0
	2. $\frac{π}{4}$
	3. $\frac{π}{2}$
	4. $π$
	5. $\frac{3π}{2}$
3. Here are the graphs of two functions.
	1. Which is the graph of $y=cos\left(θ\right)$? Explain how you know.
	2. Which is the graph of $y=sin\left(θ\right)$? Explain how you know.
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1. Which statements are true for *both* functions $y=cos\left(θ\right)$ and $y=sin\left(θ\right)$? Select **all** that apply.
	1. The function is periodic.
	2. The maximum value is 1.
	3. The maximum value occurs at $θ=0$.
	4. The period of the function is $2π$.
	5. The function has a value of about 0.71 when $θ=\frac{π}{4}$.
	6. The function has a value of about 0.71 when $θ=\frac{3π}{4}$.
2. Here is a graph of a function $f$.
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* The function $f$ is either defined by $f\left(θ\right)=cos^{2}\left(θ\right)+sin^{2}\left(θ\right)$ or $f\left(θ\right)=cos^{2}\left(θ\right)−sin^{2}\left(θ\right)$. Which definition is correct? Explain how you know.
1. The minute hand on a clock is 1.5 feet long. The end of the minute hand is 6 feet above the ground at one time each hour. How many feet above the ground could the center of the clock be? Select **all** that apply.
	1. 4.5
	2. 5
	3. 6
	4. 7
	5. 7.5
* (From Unit 6, Lesson 7.)
1. Here is a graph of the water level height, $h$, in feet, relative to a fixed mark, measured at a beach over several days, $d$.
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	1. Explain why the water level is a function of time.
	2. Describe how the water level varies each day.
	3. What does it mean in this context for the water level to be a periodic function of time?
* (From Unit 6, Lesson 8.)



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