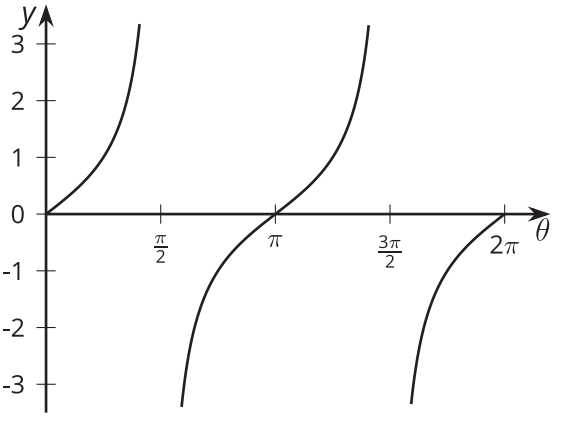
Lesson 12 Practice Problems

1. Here is a graph of f given by $f(\theta) = \tan(\theta)$.

   a. Are $\frac{\pi}{2}$ and $\frac{3\pi}{2}$ in the domain of f? Explain how you know.

   b. What are the θ-intercepts of the graph of f? Explain how you know.



2. The function f is given by $f(\theta) = \tan(\theta)$. Which of the statements are true? Select **all** that apply.

   A. f is a periodic function

   B. The domain of f is all real numbers.

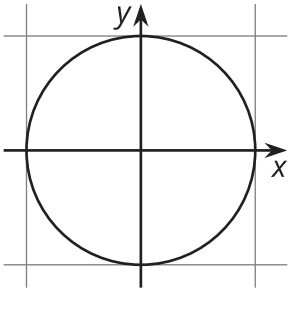
   C. The range of f is all real numbers.

   D. The period of f is 2π.

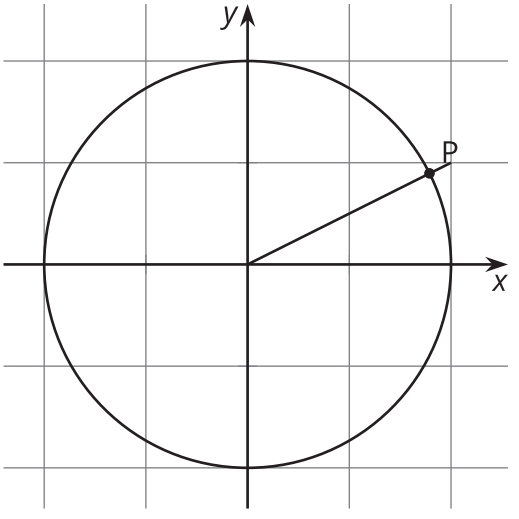
   E. The period of f is π.

3. Here is the unit circle.

   If $\tan(a) > 1$ where could angle a be on the unit circle?



4. Here is a point on the unit circle.



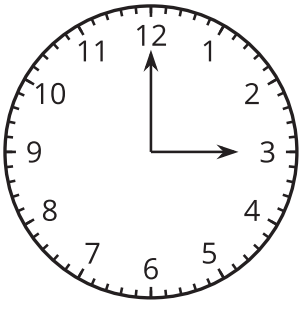
a. Explain why the line going through $(0, 0)$ and P has slope $\frac{1}{2}$.

b. What is the tangent of the angle represented by P? Explain how you know.

5. For which angles θ between 0 and 2π is $\cos(\theta) < 0$? Explain how you know.

(From Unit 6, Lesson 9.)

6. It is 3:00 a.m.



a. What angle will the hour hand rotate through in the next hour? Explain how you know.

b. What angle will the hour hand rotate through in the next 12 hours? Explain how you know.

c. What angle will the hour hand rotate through in the next 24 hours? Explain how you know.

(From Unit 6, Lesson 11.)

7. The function f is given by $f(x) = x^2$.

a. Write an equation for the function g whose graph is the graph of f translated 3 units left and then reflected over the y-axis.

b. Write an equation for the function h whose graph is the graph of f reflected over the y-axis and then translated 3 units to the left.

c. Do g and h have the same graph? Explain your reasoning.

(From Unit 5, Lesson 7.)