Section 5.3 Extra Practice

1. Let $y = \tan \theta$ for $0 \le \theta \le 2\pi$. State the values for θ when

a) $y = 0$ **b)** $y = 1$

c) $y = -1$ **d)** y is undefined

2. For $y = \tan x$, state the exact value of y for each.

a) $x = 30°$ **b)** $x = 45°$ **c)** $x = 60°$

d) $x = 90°$ **e)** $x = 120°$ **f)** $x = 135°$

g) $x = 150°$ **h)** $x = 180°$

3. a) Graph $y = \tan x$ for $0° \le x \le 360°$.

b) State the domain.

c) State the range.

d) State the period.

4. a) Graph $y = \tan x$ for $-\pi \le x \le \pi$.

b) State the coordinates of the x-intercepts.

c) State the equations of the asymptotes.

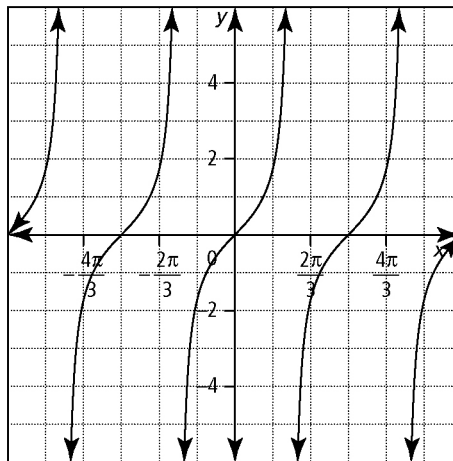**d)** What is the y-intercept?

5. Does $y = \tan x$ have an amplitude? Explain.

6. State the asymptotes and domain of $y = \tan x$, in degrees.

7. A small plane is flying at a constant altitude of 3000 m directly toward an observer. Assume the land in the area close to the observer is flat.
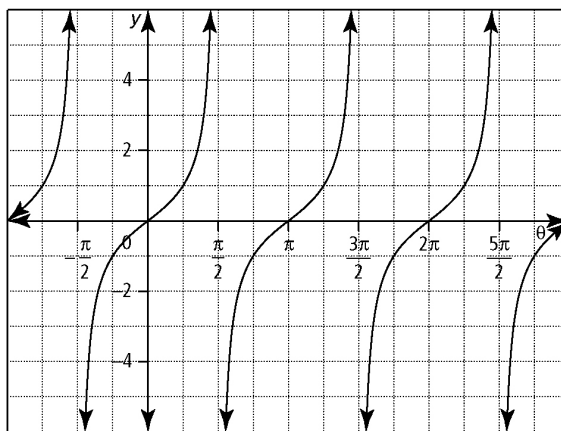
a) Draw a diagram to model the situation. Label the horizontal distance between the plane and the observer d, and the angle of elevation from the observer to the plane θ.

b) Write an equation that relates the distance to the angle of elevation.

c) At what angle is the plane directly above the observer? What is the distance, d, when the plane is directly above the observer?

8. Consider the graph.

a) State the zeros of this function.

b) Where do the asymptotes of the function occur?

c) What is the domain of this function?

d) What is the range of this function?

9. Use the graph of the function $y = \tan \theta$ to determine each value.

a) $\tan \pi$ **b)** $\tan\left(-\dfrac{\pi}{4}\right)$

c) $\tan 9\dfrac{\pi}{4}$ **d)** $\tan 5\dfrac{\pi}{2}$