Name: **Date:**

Practice: Key Features of Trigonometric Functions B

For problems 1 and 2, use only your knowledge of angle measures and the unit circle to determine the quadrant for each radian angle measure. Do not use a calculator.

1. $\frac{20\pi}{3}$

2. $-\frac{17\pi}{4}$

For problems 3 and 4, evaluate $f(x) = -3\cos[\pi(x - 5)] + 1$ at the given value without using a calculator.

3. $f(-8.25)$

4. $f\left(\frac{86}{3}\right)$

Complete problem 5 without using a calculator.

5. List the first four positive values of t for which $2\sin\left(\frac{\pi t}{6}\right) = \sqrt{3}$.

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For problems 6 and 7, simplify the expression as much as possible.

6. $\csc\left[\frac{\pi}{7}(7-x)\right]$

7. $\tan\left[\frac{1}{9}(x-18\pi)\right]$

Use the given information to complete problems 8–10.

The air temperature inside a room oscillates about a target temperature. When the temperature gets too hot, the air conditioner turns on. When the temperature gets too cold, the air conditioner turns off. The temperature in degrees Fahrenheit can be modeled as a function of time (measured in minutes) by $F(t) = 2\ \cos\left[\frac{\pi}{10}(t-10)\right] + 70$.

8. Is this function even, odd, or neither?

9. Identify the following key features: amplitude, period, phase shift, vertical displacement, midline, domain, and range.

10. Simplify the function.