

Name: _____ / 25

There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

1. [6 points] Evaluate the trigonometric functions below. Assume all angles are in radians.

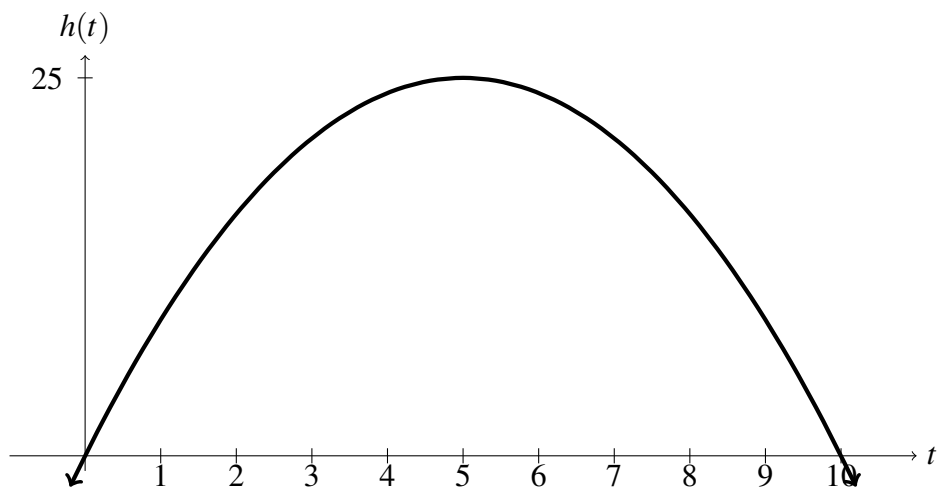
a. $\sin(\pi/2) =$

b. $\cos(2\pi/3) =$

c. $\tan(3\pi/4) =$

2. [4 points] Solve the equation $\sin(x) = 0$. Give the most complete solution.

3. [15 points] The height of an object in meters is given by the equation $h(t) = 10t - t^2$ where t is measured in seconds. The graph of $h(t)$ is provided below.



- a. Find $h(2)$ and explain (using a complete sentence) what this number represents in the context of the problem. Include units.
- b. Find the average velocity of the object over the time interval from $t = 2$ to $t = 6$. Include units with your answer.
- c. On the graph above, draw and label the secant line between the points $P(2, h(2))$ and $Q(6, h(6))$. (By **label**, we mean label with the word **secant**.)
- d. On the graph above, draw and label the tangent line at the point $P(2, h(2))$. (By **label**, we mean label with the word **tangent**.)
- e. **Based on the graph and the lines you drew in parts c and d**, do you expect the slope of the tangent line to $h(x)$ at P to be larger than, equal to, or smaller than the slope of the secant line between points P and Q ? Explain your reasoning using complete sentences.