Unit 4 Take Home Quiz
Complete in your AP Prep Composition Book.

1. An object moves along the x-axis such that the velocity of the object for time $t \geq 0$ is given by:
   $$v(t) = \sin\left(\frac{\pi}{3}t\right)$$

   A) What is the acceleration of the object when $t = 4$?
   B) Consider the following two statements:
   Statement I: The particle moves to the right from $t = 3$ to $t = 4.5$
   Statement II: The particle is speeding up from $t = 3$ to $t = 4.5$
   Which, if any, of these statements are true? For each statement, provide a reason why it is correct or incorrect.

2. A manufacturer wants to design a box having a base where the length is twice the width. The surface area must be exactly 300 square inches. What dimensions will produce a box of maximum volume?