7. [10 points] An apple farmer wants to assess the damage done by a plague to the trees in his orchard. In order to do so, he installs cameras on a couple of small flying robots to film the damage done by the plague to the trees. Let \( f(t) \) and \( s(t) \) be the height above the ground (in feet) of the first and second robot \( t \) seconds after they started recording.

   a. [5 points] Let \( f(t) = 4 - 3 \cos \left( \frac{\pi}{5} t - \frac{2\pi}{5} \right) \). Find the time(s) at which the first robot is 6 feet above the ground for \( 0 \leq t \leq 12 \). Your answer(s) should be exact. Show all your work.

   \[
   \text{Answer: } t = \frac{3}{2}, \frac{11}{2}.
   \]

   b. [5 points] The graph of the sinusoidal function \( s(t) \) is shown below only for \( 1 \leq t \leq 13 \). Find a formula for \( s(t) \).

   \[
   \text{Answer: } s(t) = \frac{1}{2} \cos \left( \frac{\pi}{10} t - \frac{\pi}{5} \right) + \frac{5}{2}.
   \]