**6.** [12 points] At the county fair, there is a ferris wheel with radius 40 feet. Riders board at the lowest point of the ferris wheel, from a platform 10 feet off the ground. Once the ride begins, the ferris wheel completes 3 revolutions in 120 seconds. Suppose that you are the last rider to board (so you begin at the lowest point), and the function $H(t)$ measures your height off the ground (in feet), t seconds after the ride starts.

   a. [4 points] On the grid below, sketch a graph $H(t)$ for one complete ride (3 revolutions). Be sure to carefully label the axes.
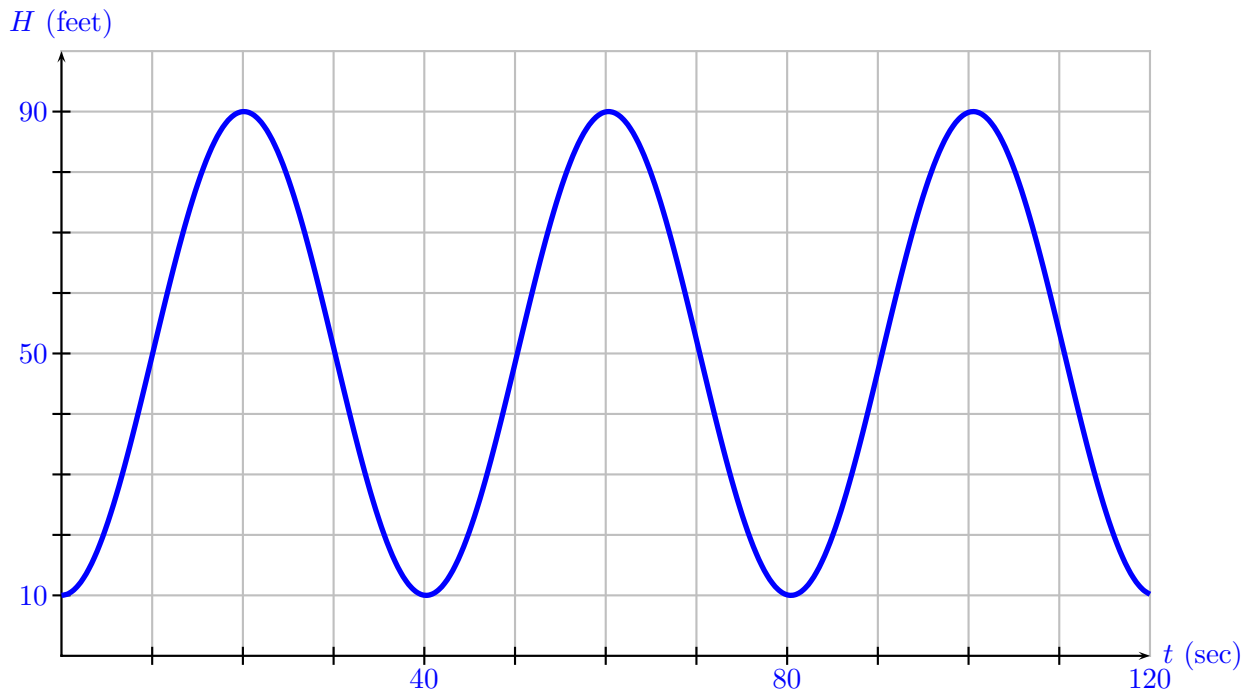
   b. [4 points] Find the period and amplitude of $H(t)$.

   Solution: 40 seconds

   period = _____

   Solution: 40 feet

   amplitude = _____

   c. [4 points] Find a formula for $H(t)$.

   Solution:

$$H(t) = 50 - 40\cos\left(\frac{\pi}{20}t\right)$$