6. [10 points] Erin is in pursuit of squirrel and suspected criminal, Elphaba. Suddenly there is a cliff ahead. Elphaba, who it turns out is a flying squirrel, jumps straight off and glides safely down to the ground. Searching for an alternative, Erin finds a ferris wheel that will take her to the ground beneath the cliff.

The ferris wheel has radius 30 meters and is rotating (clockwise in the diagram shown) at a constant rate of one half radian per minute. Let $H(t)$ be Erin's height above the ground beneath the cliff (in meters) t minutes after she gets on the ferris wheel. A diagram of the situation is shown to the right. Note that Erin gets on the ferris wheel at position A, and $H(0) = 30$.
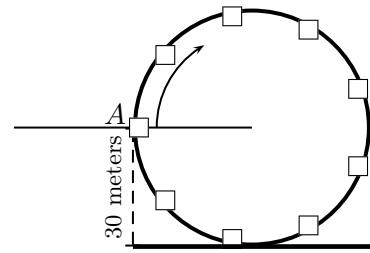
a. [2 points] Which of the following graphs is a graph of $y = H(t)$?
Write the letter (A-D) of the ONE *best choice.*   **Answer:** _____
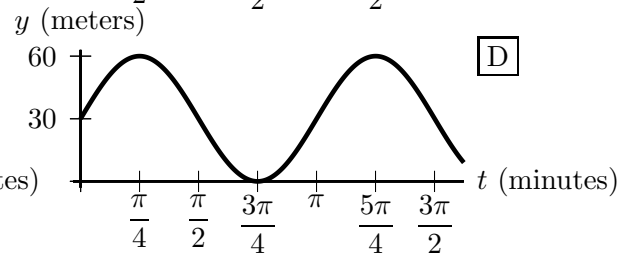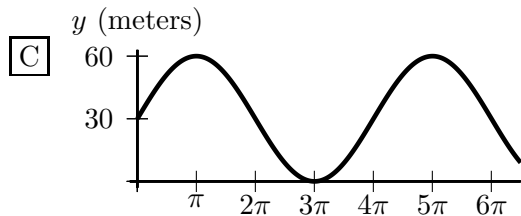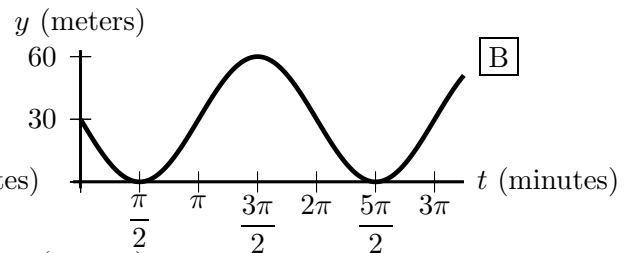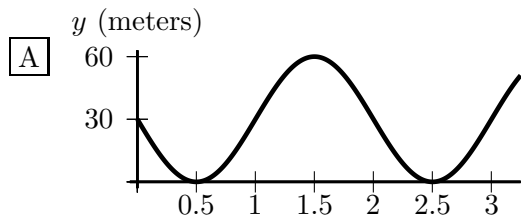
b. [4 points] Write a formula for the sinusoidal function $H(t)$.

Answer: $H(t) =$ _____

c. [4 points] Erin figures that if she jumps off when she is no more than b meters above the ground, where b is a constant between 0 and 30, then she will be fine. Erin would like to jump off before she has to go around the ferris wheel again. What is the latest time she can jump off without going around a full revolution? Remember to show your work clearly. Your answer may involve the constant b.

Answer: _____