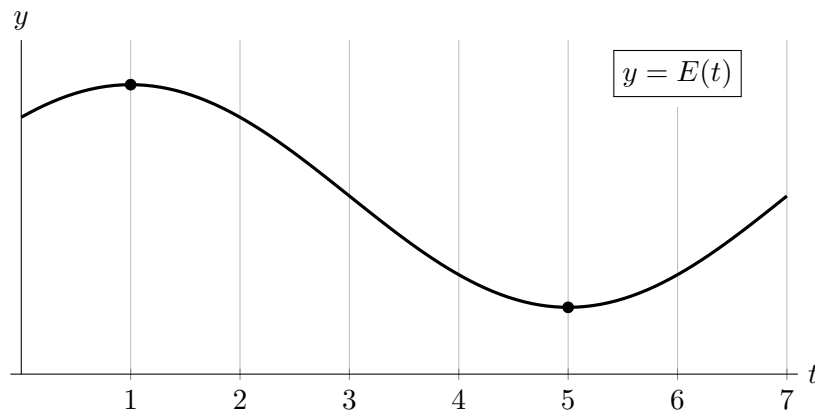


7. [7 points]

- a. [4 points] Zoey, a zoologist, is studying the population of giraffes near a lake. She notices that the number of giraffes near the lake fluctuates in a sinusoidal manner over a 24 hour cycle. The giraffe population reaches a minimum of 30 giraffes at 7:00am every day, and rises to a maximum of 50 giraffes at 7:00pm every day. Let  $G(t)$  be a sinusoidal function modeling the number of giraffes at the lake  $t$  hours after 6:00am. Find a formula for  $G(t)$ .

**Answer:**  $G(t) =$  \_\_\_\_\_

- b. [3 points] Zoey also studies the population of elephants in the area. Let  $E(t)$  be a sinusoidal function modeling the number of elephants at the lake  $t$  hours after 6:00am. A portion of the graph of  $E(t)$  is shown below.



Give the **exact** values of the next two times  $t$  when this model predicts there will be the same number of elephants near the lake as there are at  $t = 2.25$  (8:15am). You do not need to show work, but limited partial credit may be awarded for work shown.

**Answer:**  $t =$  \_\_\_\_\_

**Answer:**  $t =$  \_\_\_\_\_