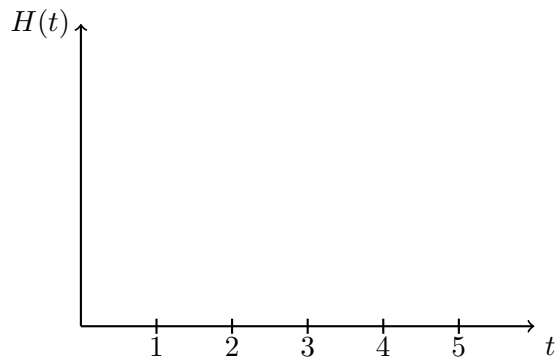


8. [10 points] Kiki has built an jetpack that she uses to fly to her lab each day. She begins at her house and arrives at her lab 5 minutes later, reaching a maximum vertical height of 99 meters above the level of her house 3 minutes into her flight. Suppose  $H(t)$ , her vertical height (in meters) above the level of her house  $t$  minutes after she leaves for the lab, is a quadratic function. Assume the domain of  $H(t)$  is  $0 \leq t \leq 5$ .



- a. [3 points] On the axes above, carefully sketch graph of  $H(t)$ , labeling the vertical intercept and the vertex. You do not need to label the right endpoint of the graph.
- b. [4 points] Find a formula for  $H(t)$  based on your graph.

$$H(t) = \underline{\hspace{15em}}.$$

- c. [3 points] Is Kiki's lab or house higher (vertically)? By how much? Give numerical evidence of your answer.