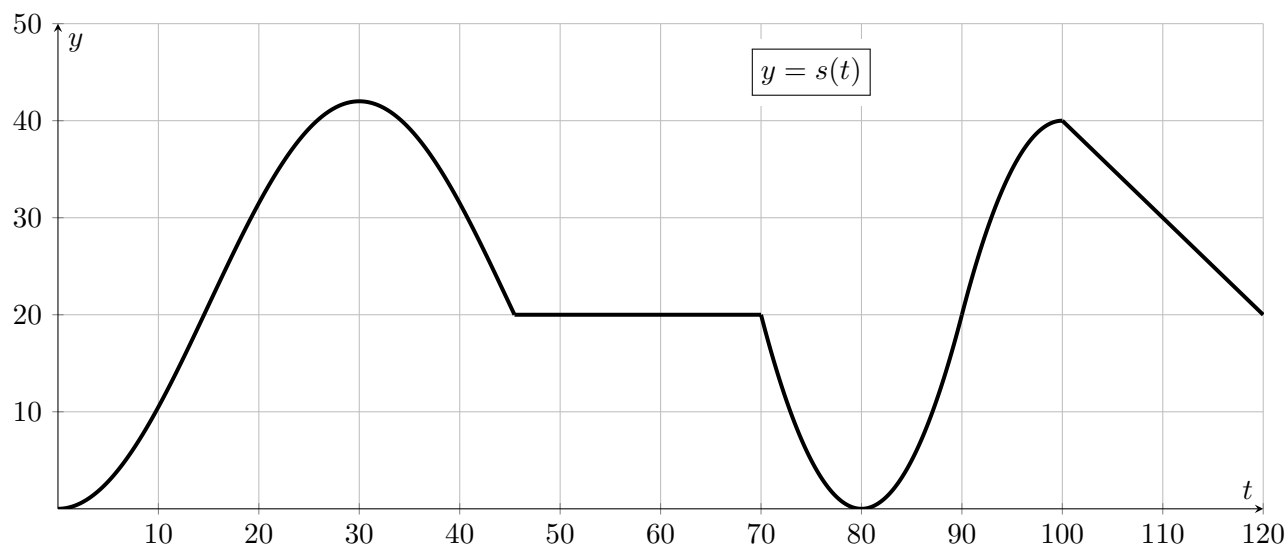


2. [9 points] You are flying your new drone over Gallup Park. On this first test flight, you just practice flying straight up and down, directly above the launch point. Suppose  $s(t)$  gives the drone's vertical height above the ground, in meters,  $t$  seconds after being launched. A graph of  $s(t)$  is given below. Note that  $s(t)$  is linear on the intervals  $[45, 70]$  and  $[100, 120]$ .



- a. [2 points] During which of the following time intervals is the rate of change of the drone's height constant? Circle all correct choices.

(0, 20)      (20, 40)      (50, 70)      (110, 120)      NONE OF THESE

- b. [1 point] At which of the following times did the drone have the greatest instantaneous velocity? Circle the one correct answer.

$t = 10$        $t = 30$        $t = 75$        $t = 80$        $t = 90$

- c. [1 point] At which time  $t$  in the interval  $[0, 70]$  was the drone's instantaneous velocity closest to its average velocity over the time interval  $[0, 70]$ ? Circle the one best answer.

$t = 10$        $t = 20$        $t = 29$        $t = 31$        $t = 40$

- d. [2 points] Find the drone's *instantaneous velocity* 110 seconds after being launched. Include units.

**Answer:** \_\_\_\_\_

- e. [3 points] Find the drone's *average speed* over the time interval  $[50, 80]$ . Include units.

**Answer:** \_\_\_\_\_