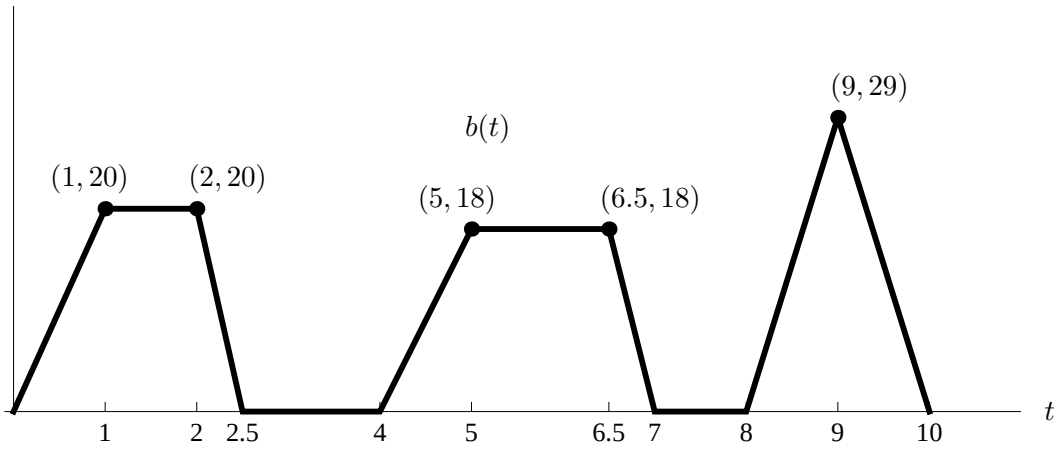
10. [12 points] Byron is blowing up a balloon. The rate at which he is blowing air into the balloon at time t is $b(t)$ cubic inches per second, graphed below. When $t = 0$, the balloon is empty.



a. [2 points] How much air has Byron blown into the balloon after 3 seconds?

After 3 seconds, the balloon springs a leak, and the air leaks out at a constant rate of r cubic inches per second.

b. [4 points] How much air is in the balloon 8 seconds after Byron started blowing it up? Your answer will involve r.

c. [3 points] Let $B(t)$ be the amount of air in the balloon after t seconds. Suppose $B(t)$ has a critical point at $t = 8.25$. Find r.

d. [3 points] Is the critical point at $t = 8.25$ a local maximum, local minimum, or neither? Briefly explain.