Exploration 2

Name_____

Below is the graph of the speed v of a bicycle (in mph) over a 20 minute time period; This is the same graph as in exploration 1. The purpose of this exploration is to find and plot the function $s(t)$ which gives the distance s (in miles) travelled over the time interval $[0, t]$ minutes.

1. Find an expression for the distance s (in miles) travelled over a time interval Δt minutes if the speed v is *constant* over that time interval.

2. The speed v is a constant 10 mph over the time interval $[0, 4]$ minutes. Find an expression for $s(t)$ for a time t within this interval ($0 \leq t \leq 4$). Graph this part of the function s over the interval $[0, 4]$. What does the slope of this part of the graph represent in the problem?

3. Similarly, the speed has constant values of 20 mph, 16 mph and 6 mph over the time intervals (in minutes) $[4, 6]$, $[6, 12]$ and $[12, 20]$, respectively. Continue to plot the function s over these successive intervals.