Exploration 1

1. Suppose you ride your bicycle at a speed of 20 miles per hour. How far do you go in 1 hour? In two hours? In 30 minutes? In 15 minutes?

2. Below is the graph of the speed of a bicycle (in mph) over a 20 minute time period.

   (a) How far does the bicycle go in the first four minutes? First twenty minutes? Between two and sixteen minutes?

   (b) What does $\int_4^{12} v(t)\, dt$ represent? What is its value?

   (c) Find values of a and b so that $\int_a^b v(t)\, dt = 2$ (miles). Shade an area on the graph that represents the value of this integral.

   (d) Does this graph represent a possibly real physical situation? Explain.