

How much Snow is on Janet's Driveway?



The weather forecast for January is a snowy one! At midnight there are 80 cubic feet of snow on Janet's driveway. Snow accumulates at a rate of 50 cubic feet per hour. At 6 AM, Janet wakes up and starts shoveling. Will she be able to make it out of her driveway in time?

1. How much snow is on Janet's driveway at 6 AM?
2. Between 6 AM and 7 AM, Janet shovels snow at a rate of 125 cubic feet per hour. Between 7 and 9 AM, Janet shovels snow at a rate of 108 cubic feet per hour.
 - a) Write a piece-wise defined equation for $j(t)$ for $0 \leq t \leq 9$ that gives the rate of change of the volume of snow on Janet's driveway at t hours after midnight.

b) Graph $j(t)$.



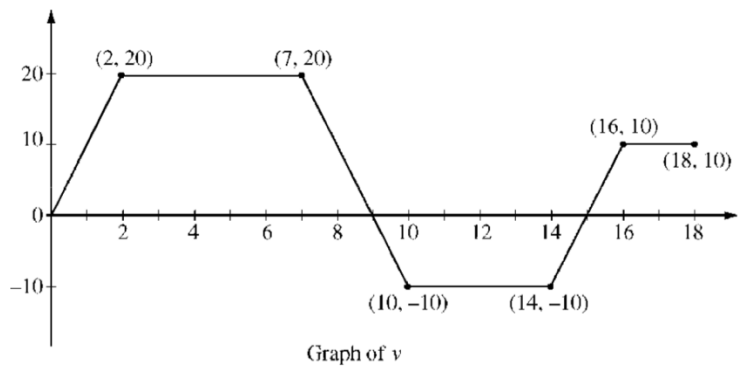
3. When is the amount of snow on Janet's driveway decreasing? How do you know?
4. How much snow is on Janet's driveway at 7 AM?
5. How much snow is on Janet's driveway at 8:30 AM?

Section 5.1 Exploring Accumulation of Change

Important Ideas:

Check Your Understanding!

- A squirrel starts at Building A at time $t = 0$ and travels along a straight wire connected to building B. For $0 \leq t \leq 18$, the squirrel's velocity is modeled by the piecewise-linear function shown below, where $v(t)$ is in meters per minute and t is in minutes.



- At what times in the interval $(0,18)$ does the squirrel change direction? Give a reason.
 - At what time is the squirrel farthest from Building A? How far from Building A is the squirrel at this time?
- (Multiple Choice) The flow of oil, in barrels per hour, is shown for a particular day in July. Which is the best approximation of the total number of barrels of oil that passed through the pipeline that day?

- 500
- 600
- 2400
- 3000
- 4800

