**2.4 –Using Rates of Change to Create a Graphical Model**

**Example 1:** Jeff stands 5m away from a motion sensor and then walks 4m toward it at a constant rate for 5 s. Then he walks 2m away from that location at a variable rate for the next 3s. He stops and waits at this location for 2s.

1. Draw a distance vs. time graph to show Jeff’s motion sensor walk.
2. What is the average rate of change in the first 5 seconds?
3. What are the instantaneous rate of change at t=1 s and t=4s?
4. What is the average rate of change in the next 3s?
5. What are the instantaneous rates of change at 6s and at 8 s?
6. What is the instantaneous rate of change at 9s?
7. Draw a speed vs. time graph for Jeff’s walk.

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**Example 2:** A runner is seen jogging at a speed of 5 m/s. She begins to slow down at a constant rate and 10 seconds later, is at a speed of 2m/s. She continues to slow down at a different constant rate and finally comes to a stop 15 seconds later.

Draw the speed vs. time graph.

What is the average rate of change of the joggers speed in the first 10 seconds?

Estimate the instantaneous rate of change in speed at 4 seconds.

Jeff stands 5m away from a motion sensor and then walks 4m toward it at a constant rate for 5 s. Then he walks 2m away from that location at a variable rate for the next 3s. He stops and waits at this location for 2s.

1. Draw a distance vs. time graph to show Jeff’s motion sensor walk.
2. Draw a speed vs. time graph for Jeff’s walk.