1. Let the graph below of $f(x)$ represents the distance Colin is from the computer in 10 seconds. [10 pts]

a.) State the domain and range of the function in this situation.

Domain: 0 to 10 seconds  
Range: 0 to 9 meters

b.) How fast did Colin walk during the first 3 seconds?

\[
\frac{\frac{3}{m}}{\frac{3}{s}} = \text{1 meter per second}
\]

3.) Find the time(s) during which Colin stopped moving. How do you know?

3 to 6 seconds and 9 to 10 seconds since the distance did not change.

d.) Approximate the time(s) where Colin is 6 meters away from the computer?

At 6 \(\frac{1}{2}\) seconds and 8 \(\frac{1}{2}\) seconds.

e.) Over which interval was Colin traveling the fastest? Justify.

Colin is traveling the fastest between 6 to 7 seconds.

From 0 to 3 seconds he is traveling 1 m/second
From 6 to 7 he is traveling 6 m/sec. * steepest rate of change
From 7 to 9 he is traveling 2 m/sec.
2. Julie gets into an airplane and waits on the tarmac for 2 minutes before it takes off. The airplane climbs to 10,000 feet over the next 15 minutes at a constant rate. After 3 minutes of being at a constant elevation of 10,000 feet, Julie jumps out of the plane and free falls at an increasing rate for 2 minutes until she reaches a height of 5,000 feet. Deploying her parachute, she slowly glides back to Earth at a decreasing rate over the next 7 minutes where she lands gently on the ground.

Create a detailed situation graph. Be sure to label your axes appropriately.

Time (minutes)

Elevation (feet)

0 - 2 minutes: waits on the tarmac

2 - 17 minutes: climbs at a constant rate to 10,000 ft.

17 - 20 minutes: stays at 10,000 ft.

20 - 22 minutes: falls at an increasing rate (non-linear) to 5,000 ft.

22 - 29 minutes: decreasing rate (non-linear) to the ground.