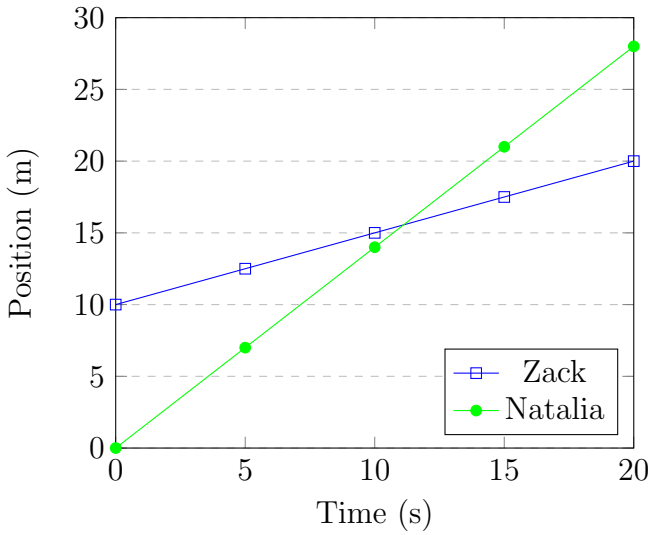
Assignment 3.01: Position vs Time Graphs

Graph 1: Position vs Time for Two People



1. Use Graph 1 to determine the following:
   (a) Where is Zack located at t=5 seconds?

   (b) Without calculating speeds, who is moving faster, Zack or Natalia? Explain your reasoning.

   (c) What is Zack's Speed?

   (d) What is Natalia's Speed?

   (e) What is Zack's Acceleration?

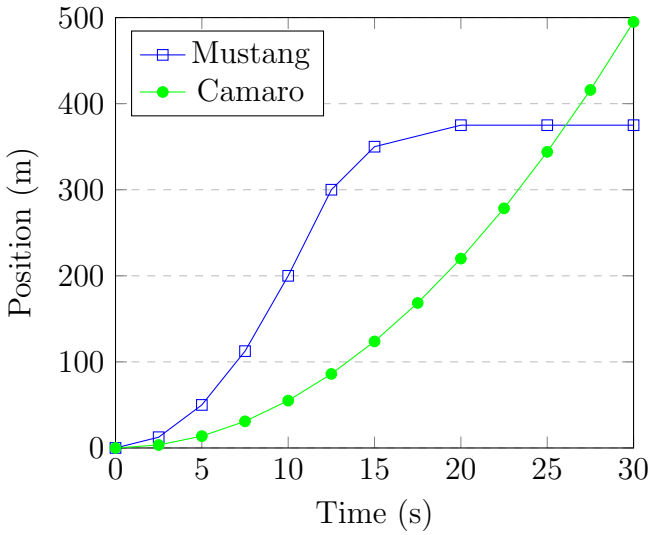
   (f) Who starts ahead, Zack or Natalia? Explain your reasoning.

   (g) Who ends ahead, Zack or Natalia? Explain your reasoning.

   (h) Who has the greater acceleration, Zack or Natalia? Explain your reasoning.

   (i) Graph 1 describes a race between Zack and Natalia. In at least 4 complete sentences, describe what happened during this race.

Graph 2: Position vs Time for Two Cars



2. Use the Graph 2 to answer the following questions:

   (a) Which car has the greater acceleration during the first 10 seconds?

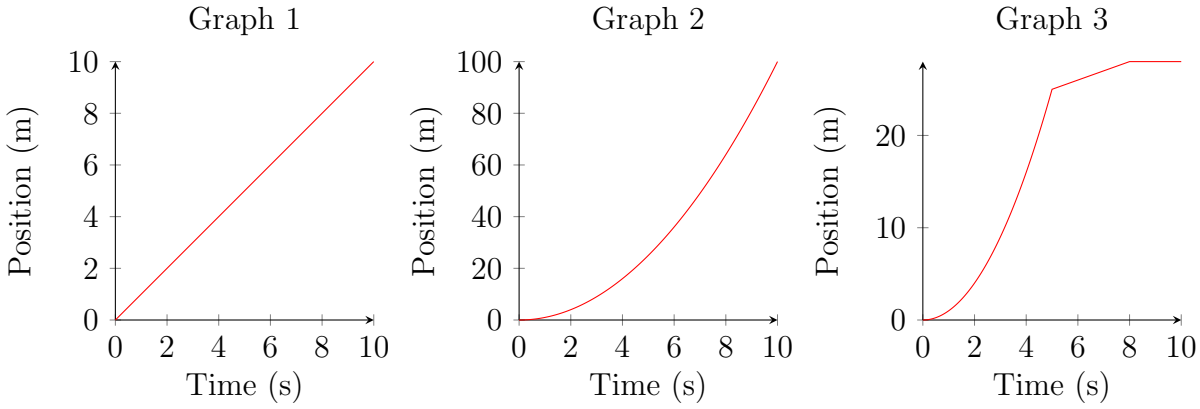
   (b) Which car slows down and stops?

   (c) Which car is traveling faster at t=10 seconds?

   (d) Which car is traveleing faster at t=20 seconds?

   (e) This graph describes a race between two cars that are racing 400 meters (approximately $\frac{1}{4}$ of a mile). In a paragraph of at least 5 sentences, explain what happens during the race.

3. Describe the motion that would result in the following graphs:



(a) Graph 1:

(b) Graph 2:

(c) Graph 3:

4. Sketch a graph that corresponds to each situation below:

(a) A car is parked.

(b) A truck drives forward 10 meters at a constant speed, then stops.

(c) A lion runs forward, then stops, then walks back to where it started.