

## HW Set 2 Motion

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### Problem 1

You start at the position  $x = -3$  m. You travel to the position  $x = 2$  m.

a. What is the displacement of this motion?

You start at the position  $x = -3$  m. You go through a displacement of  $\Delta x = +6$  m.

b. What is the final position due to this motion?

You go through a displacement of  $\Delta x = -4$  m. You end up at the position  $x = 2$  m.

c. What was the starting position of this motion?

### Problem 2

You start at the position  $x = 5$  m. You travel to the position  $x = -3$  m. This motion took an elapsed time of 4 s.

a. What is the average velocity of this motion?

You start at the position  $x = 5$  m. You travel with an average velocity of 2 m/s and end up at the position  $x = 13$  m.

b. How much time does it take to go through the motion?

You start at the position  $x = 5$  m. You travel with an average velocity of  $-3$  m/s for 4 s.

c. Where do you end up?

You travel with an average velocity of  $-4$  m/s for 3 s. You end up at the position  $x = 2$  m.

d. Where do you start?

### Problem 3

You walk in a certain direction at an average velocity of 1 m/s for 4 seconds. You then run at the same direction at a constant velocity of 5 m/s for another 4 seconds.

a. What is the total distance traveled?

b. What was the average velocity for the entire trip?

c. If you ran for 6 seconds instead, what was the average velocity for the entire trip then?

d. If you walked at  $-2$  m/s instead (in the opposite direction), what was the average velocity for the entire trip then?