

This print-out should have 18 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering. The due time is Central time.

001 (part 1 of 1) 7 points

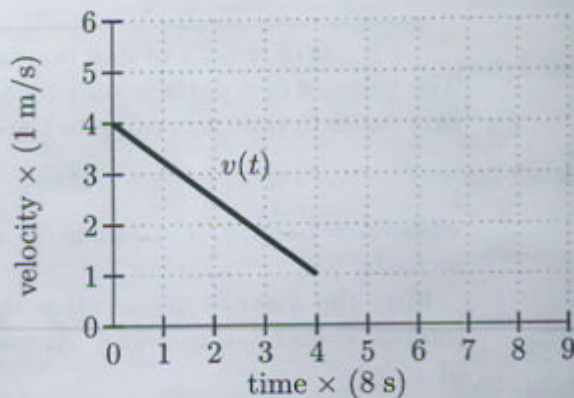
Runner A is initially 4.27 mi West of a flagpole and is running with a constant velocity of 3.31 mi/h due East. Runner B is initially 3.75 mi East of the flagpole and is running with a constant velocity of 6.2 mi/h due West. Consider East to be the positive direction.

What is the displacement of runner B from the flagpole when their paths cross? Answer in units of mi.

002 (part 1 of 2) 4 points

The velocity $v(t)$ of some particle is plotted as a function of time on the graph below.

The scale on the horizontal axis is 8 s per grid square and on the vertical axis 1 m/s per grid square.



Initially, at $t = 0$ the particle is at $x_0 = 36 \text{ m}$. What is the position x of the particle at time $t = 32 \text{ s}$? Answer in units of m.

003 (part 2 of 2) 4 points

What is the particle's acceleration? Answer in units of m/s^2 .

004 (part 1 of 1) 2 points

If the acceleration of an object is zero at some instant in time, what can be said about its velocity at that time?

1. It is negative.
2. It is zero.
3. It is not changing at that time.
4. It is positive.
5. Unable to determine.

005 (part 1 of 1) 7 points

A car traveling in a straight line has a velocity of 6.5 m/s at some instant. After 3.05 s , its velocity is 10.2 m/s .

What is its average acceleration in this time interval? Answer in units of m/s^2 .