

This print-out should have 6 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Note that this homework is due Friday

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**001** (part 1 of 2) 10.0 points

A boy runs 16.6 blocks North, 8.3 blocks Northeast, and 11.2 blocks West.

Determine the length of the displacement vector that goes from the starting point to his final position.

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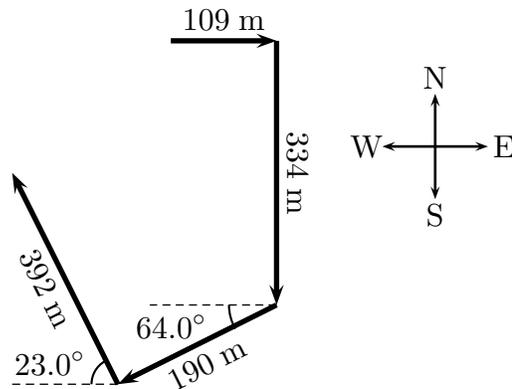
**002** (part 2 of 2) 10.0 points

Determine the direction of the displacement vector. (Use counterclockwise as the positive angular direction, between the limits of  $-180^\circ$  and  $+180^\circ$  from East) Answer in units of  $^\circ$ .

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**003** (part 1 of 2) 10.0 points

A person walks the path shown. The total trip consists of four straight-line paths.



*Note:* Figure is not drawn to scale.

a) At the end of the walk, what is the magnitude of the person's resultant displacement measured from the starting point? Answer in units of m.

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**004** (part 2 of 2) 10.0 points

b) What is the direction (measured from due west, with counterclockwise positive) of the person's resultant displacement? Answer in units of  $^\circ$ .

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**005** (part 1 of 2) 10.0 points

A truck travels up a hill with a  $15^\circ$  incline.

The truck has a constant speed of 18 m/s.

a) What is the horizontal component of the truck's velocity? Answer in units of m/s.

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**006** (part 2 of 2) 10.0 points

b) What is the vertical component of the truck's velocity? Answer in units of m/s.