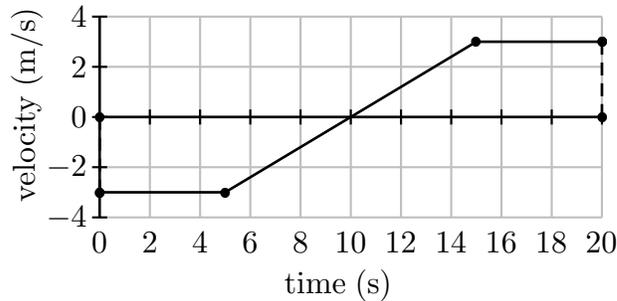


This print-out should have 13 questions, check that it is complete. Multiple-choice questions may continue on the next column or page: find all choices before making your selection. The due time is Central time.

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**001** (part 1 of 6) 10 points

Consider the plot below describing motion of an object along a straight path as shown in the figure below.



Find the average acceleration during the time interval 0 s to 5 s. Answer in units of  $\text{m/s}^2$ .

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**002** (part 2 of 6) 10 points

Find the average acceleration during the time interval 5 s to 15 s. Answer in units of  $\text{m/s}^2$ .

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**003** (part 3 of 6) 10 points

Find the average acceleration during the time interval 0 s to 20 s. Answer in units of  $\text{m/s}^2$ .

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**004** (part 4 of 6) 10 points

Find the instantaneous acceleration at 2 s. Answer in units of  $\text{m/s}^2$ .

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**005** (part 5 of 6) 10 points

Find the instantaneous acceleration at 10 s. Answer in units of  $\text{m/s}^2$ .

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**006** (part 6 of 6) 10 points

Find the instantaneous acceleration at 18 s. Answer in units of  $\text{m/s}^2$ .

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**007** (part 1 of 3) 10 points

A hockey puck sliding on a frozen lake comes to rest after traveling 181 m.

If its initial velocity is 4.1 m/s, what is its acceleration if that acceleration is assumed constant? Answer in units of  $\text{m/s}^2$ .

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**008** (part 2 of 3) 10 points

How long is it in motion? Answer in units of s.

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**009** (part 3 of 3) 10 points

What is its speed after traveling 132 m? Answer in units of m/s.

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**010** (part 1 of 2) 10 points

Given:  $g = 9.8 \text{ m/s}^2$ .

Throw a ball upward from point  $O$  with an initial speed of 108 m/s.

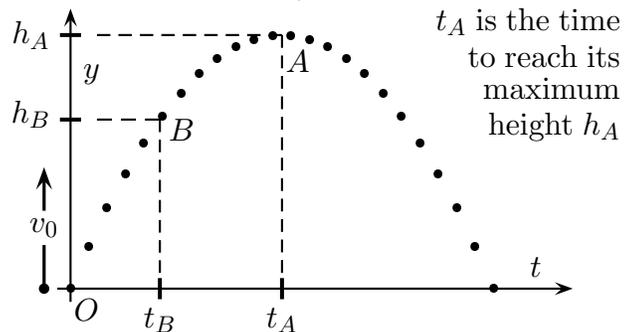


Figure is *not* drawn to scale.

What is the maximum height  $h_A$ ? Answer in units of m.

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**011** (part 2 of 2) 10 points

If the speed of the ball as it passes point  $B$  is  $\frac{1}{2} v_0$ , what is the height  $h_B$  of  $B$  above  $O$ ? Answer in units of m.

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**012** (part 1 of 2) 10 points

Given:  $g = 9.8 \text{ m/s}^2$ .

A stone is thrown upwards from the edge of a cliff  $y_0 = 10.4 \text{ m}$  high. It just misses the cliff on the way back down and hits the ground below, at  $y = 0$ , with a speed of  $v = 21.6 \text{ m/s}$ .

With what velocity was it released? Take up to be positive. Answer in units of m/s.

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**013** (part 2 of 2) 10 points

During the flight, what is the maximum height of the stone measured with respect to the ground? Answer in units of m.