Warm Up Question 1

At an initial instant, a cart has a velocity of $-10\,\mathrm{m/s}$, and at all later times it has an acceleration of $2.0\,\mathrm{m/s^2}$. What is the cart's velocity at an instant $3.0\,\mathrm{s}$ after the initial instant? Explain your answer.

1. $-16\,\mathrm{m/s}$. Decreases by $2.0\,\mathrm{m/s}$ each second.
2. $-4.0\,\mathrm{m/s}$. Increases by $2.0\,\mathrm{m/s}$ each second.
3. $-4.0\,\mathrm{m/s}$. Use a kinematic equation.
4. Something other than $-4.0\,\mathrm{m/s}$.

Warm Up Question 2

A hockey puck moves right with speed $20\,\mathrm{m/s}$, hits a wall and bounces. After this is moves left with speed $20\,\mathrm{m/s}$. Is the average acceleration of the puck from the moment just before it hits the wall until the moment just after it bounces back zero, positive or negative? Explain your answer.

1. Negative. Velocity changes from positive to negative.
2. Negative. Slope of velocity graph is negative.
3. Zero. No change in position.
4. Zero. Velocity does not change.

Question 1

A cart slides to the right with constantly decreasing *speed*.

Which of the following is true?

1. The average acceleration is positive.
2. The average acceleration is negative.
3. The average acceleration is negative if the cart is right of the origin but positive if it is left of the origin.
4. The average acceleration is negative if the cart is left of the origin but positive if it is right of the origin.
5. The average acceleration is zero.