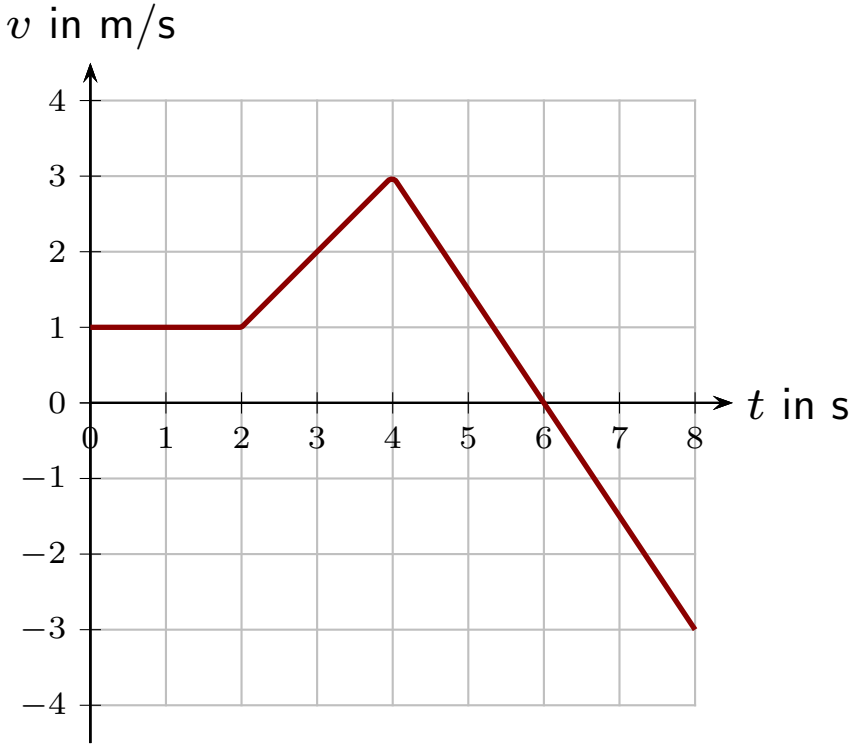
Question 1

A graph of velocity vs. time for an object moving in one dimension is illustrated.

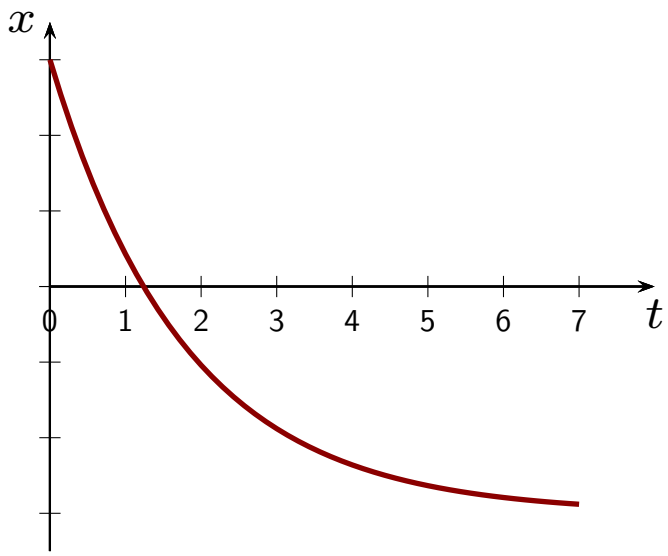


What is the displacement of the object in the interval from $t = 0\,\mathrm{s}$ to $t = 8\,\mathrm{s}$?

1. $-24\,\mathrm{m}$
2. $0\,\mathrm{m}$
3. $4\,\mathrm{m}$
4. $6\,\mathrm{m}$
5. $24\,\mathrm{m}$

Question 2

A graph of position vs. time for an object that moves in one dimension is as illustrated.

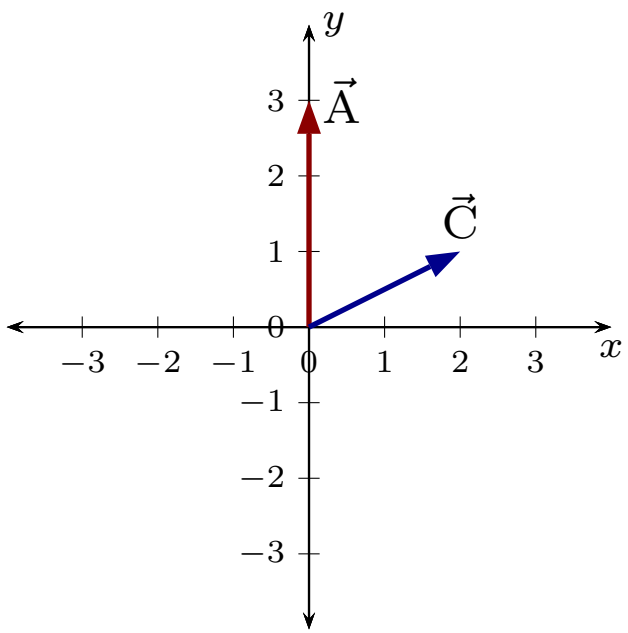


Which of the following is true regarding the acceleration during the illustrated period?

1. $a = 0$ at all times.
2. $a > 0$ at all times.
3. $a < 0$ at all times.
4. $a > 0$ sometimes and at others $a < 0$.

Question 3

Two vectors are illustrated.

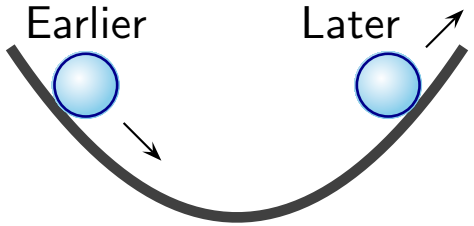


A third vector $\vec{B}$ satisfies $\vec{C} = \vec{A} + \vec{B}$. Which of the following represents $\vec{B}$?

1. $\vec{B} = 2\hat{i} + 4\hat{j}$
2. $\vec{B} = -2\hat{i} - 2\hat{j}$
3. $\vec{B} = -2\hat{i} + 2\hat{j}$
4. $\vec{B} = 2\hat{i} - 2\hat{j}$
5. $\vec{B} = 2\hat{i} + 2\hat{j}$
6. $\vec{B} = -2\hat{i} - 4\hat{j}$

Question 4

A ball of ice slides inside a bowl as illustrated. At the indicated earlier moment is slides down with speed $2.0\,\mathrm{m/s}$ and at the indicated later moment it slides up with speed $2.0\,\mathrm{m/s}$.



Which of the following best represents the average acceleration from the earlier to the later moment?

1. $\vec{\mathrm{a}}_{\mathrm{avg}} = 0$.
2. $\vec{\mathrm{a}}_{\mathrm{avg}} \neq 0$ with direction ↑.
3. $\vec{\mathrm{a}}_{\mathrm{avg}} \neq 0$ with direction ↓.
4. $\vec{\mathrm{a}}_{\mathrm{avg}} \neq 0$ with direction →.
5. $\vec{\mathrm{a}}_{\mathrm{avg}} \neq 0$ with direction ↗.