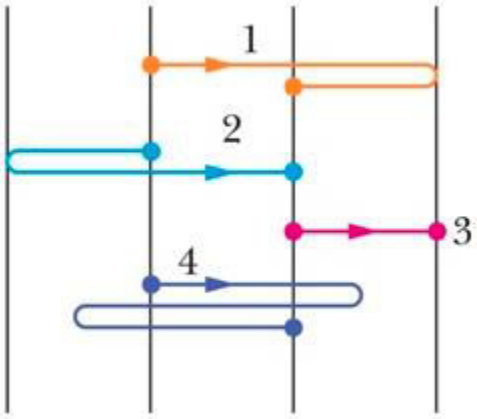
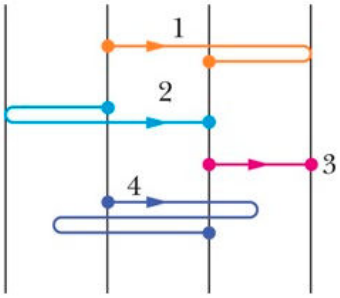
Chapter 02, Concept Question 03

1. Figure 2-18 shows four paths along which objects move from a starting point, all in the same time interval. The paths pass over a grid of equally spaced straight lines.



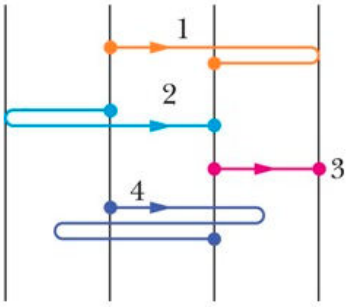
In the following questions, you will need to rank the paths. If multiple paths rank equally, use the same rank for each, then exclude the intermediate ranking (i.e. if objects A, B, and C must be ranked, and A and B must both be ranked first, the ranking would be A:1, B:1, C:3). If all paths rank equally, rank each as '1'.

Rank the paths according to the average velocity of the objects, greatest first.



Object 1 1
Object 2 1
Object 3 1
Object 4 1

Rank the paths according to the average speed of the objects, greatest first.

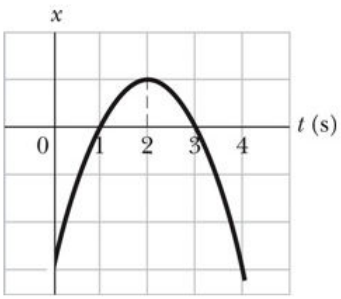


Object 1 2
Object 2 2
Object 3 4
Object 4 1

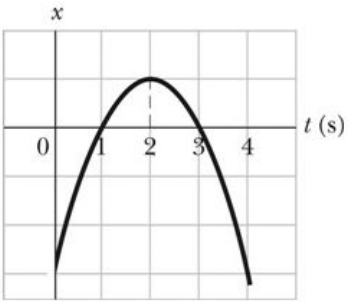
Chapter 02, Concept Question 04

Figure 2-19 is a graph of a particle's position along an x axis versus time.

Figure 2-19 is a graph of a particle's position along an x axis versus time.

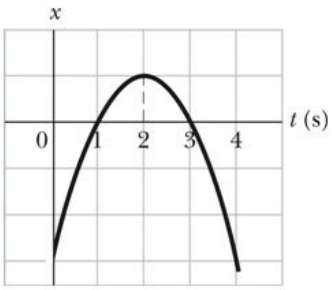


At time t = 0, what is the sign of the particle's position?



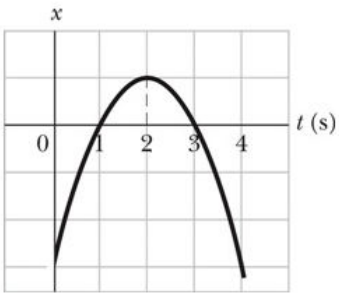
- (•) negative
- ( ) positive

Is the particle's velocity positive, negative, or 0 at t = 1 s?



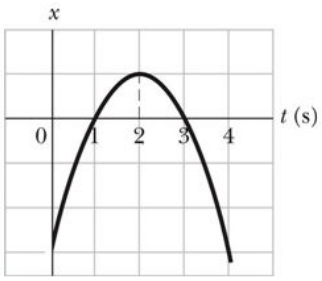
- ( ) zero
- ( ) negative
- (•) positive

Is the particle's velocity positive, negative, or 0 at t = 2 s?



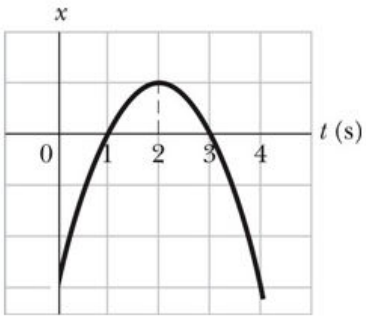
- ( ) negative
- ( ) positive
- (•) zero

Is the particle's velocity positive, negative, or 0 at $t = 3$ s ?



- positive
- zero
- negative

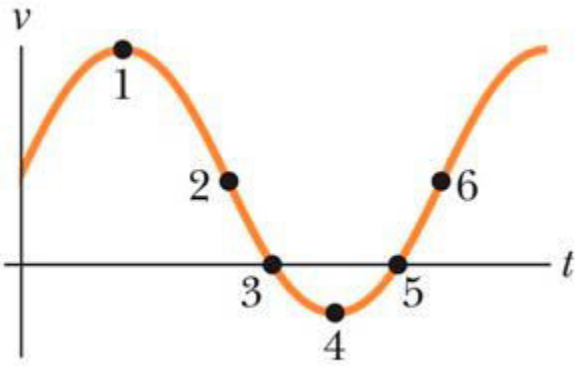
How many times does the particle go through the point $x = 0$?



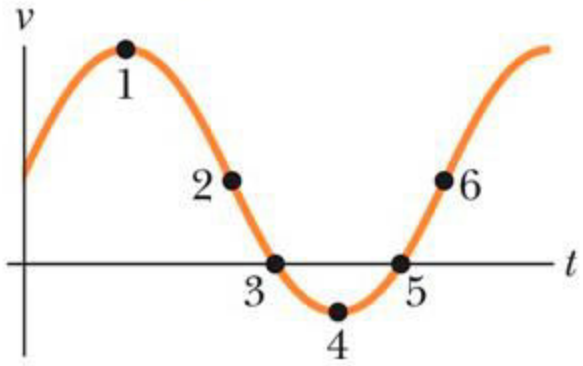
Number of times passing through zero: Number 2 Units This answer has no units

Chapter 02, Concept Question 05

Figure 2-20 gives the velocity of a particle moving along an axis. Point 1 is at the highest point on the curve; point 4 is at the lowest point; and points 2 and 6 are at the same height.

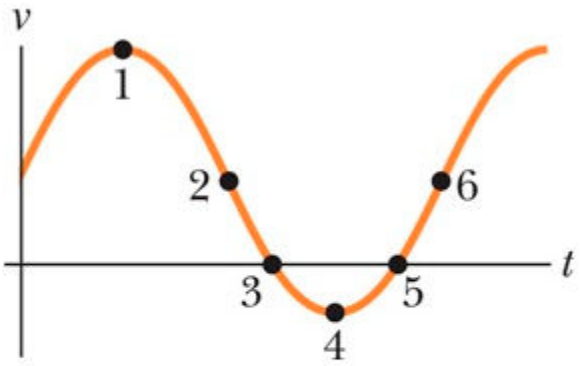


What is the direction of travel at time $t = 0$?



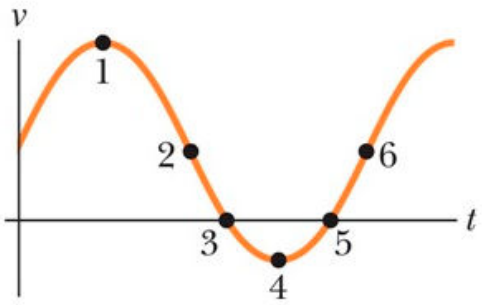
- negative
- positive

What is the direction of travel at point 4?



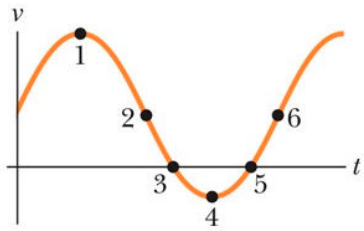
- positive
- negative

At which of the six numbered points does the particle reverse its direction of travel? (Multiple answers may be correct)



- [ ] Point 1
- [ ] Point 2
- [x] Point 3
- [ ] Point 4
- [x] Point 5
- [ ] Point 6

Rank the six points according to the magnitude of the acceleration, greatest first. If multiple points rank equally, use the same rank for each, then exclude the intermediate ranking (i.e. if objects A, B, and C must be ranked, and A and B must both be ranked first, the ranking would be A:1, B:1, C:3). If all points rank equally, rank each as '1'.



Point 1: 5
Point 2: 1
Point 3: 3
Point 4: 5
Point 5: 3
Point 6: 1

Chapter 02, Concept Question 08

The following equations give the velocity v(t) of a particle in four situations: **(a)** $v = 3$; **(b)** $v = 4t^2 + 2t - 6$; **(c)** $v = 3t - 4$; **(d)** $v = 5t^2 - 3$. To which of these situations do the equations of Table 2.1 of the Text-book apply?

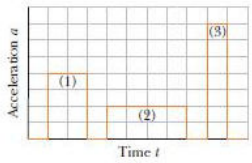
The following equations give the velocity v(t) of a particle in four situations: **(a)** $v = 3$; **(b)** $v = 4t^2 + 2t - 6$; **(c)** $v = 3t - 4$; **(d)** $v = 5t^2 - 3$. To which of these situations do the equations of Table 2.1 of the Text-book apply?

- [x] A
- [ ] B
- [x] C
- [ ] D

Chapter 02, Concept Question 11

Figure 2-23 shows that a particle moving along an x axis undergoes three periods of acceleration. Without written computation, rank the acceleration periods according to the increases they produce in the particle's velocity, greatest first.

Figure 2-23 shows that a particle moving along an x axis undergoes three periods of acceleration. Without written computation, rank the acceleration periods according to the increases they produce in the particle's velocity, greatest first.



- ( ) 3, 1, 2
- ( ) 3, 2, 1
- ( ) 3, 1 and 2 tie
- ( ) 1, 3, 2
- (•) 1 and 2 tie, 3