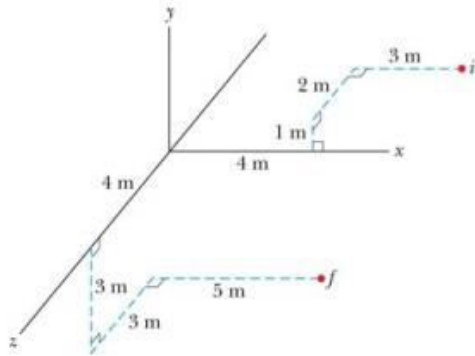


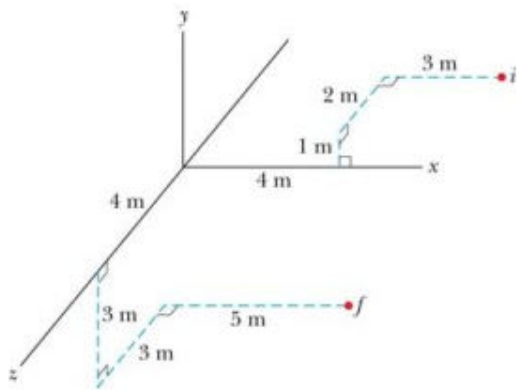
Question 1 Quiz 3

The figure shows these initial position i and the final position f of a particle.



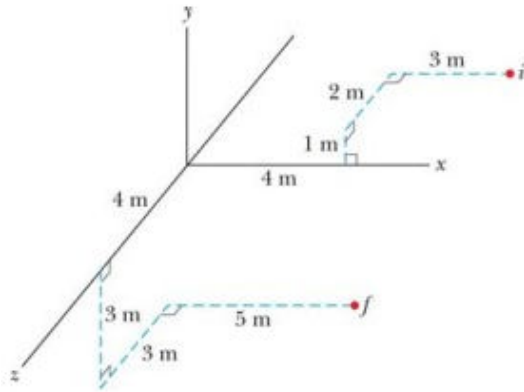
✔ Your answer is correct.

What is the initial position vector \vec{r}_i in unit-vector notation?



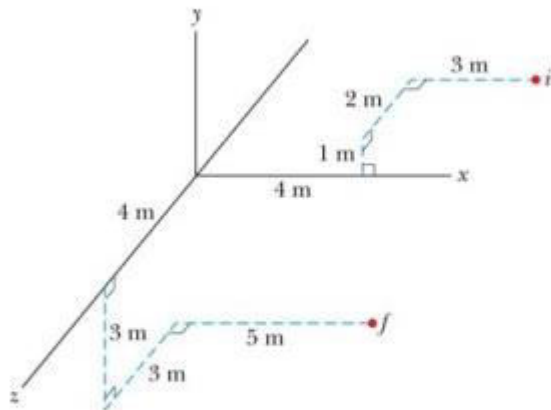
7 m \hat{i} + 1 m \hat{j} + -2 m \hat{k}

What is the initial position vector \vec{r}_f in unit-vector notation?



$$5 \text{ m } \hat{i} + -3 \text{ m } \hat{j} + 1 \text{ m } \hat{k}$$

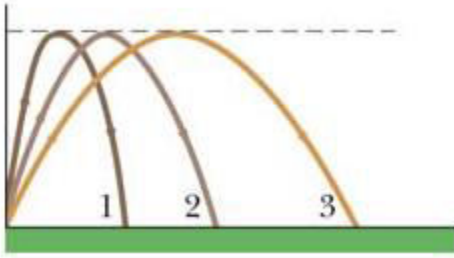
What is the x component of displacement $\Delta \vec{r}$?



$$-2 \text{ m } \hat{i}$$

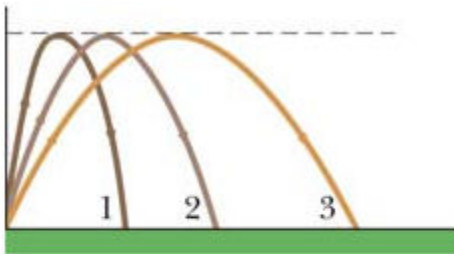
Question 2

The figure shows three paths for a football kicked from ground level.



In the following questions, you will be ranking these 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'.

Ignoring the effects of air, rank the paths according to time of flight, greatest first.



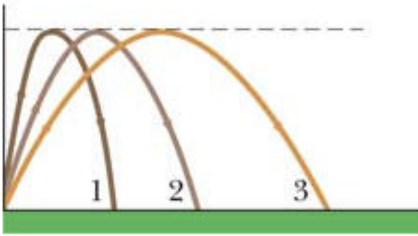
Path 1

Path 2

Path 3

1. Greatest
2. Second greatest
3. Third greatest

Ignoring the effects of air, rank the paths according to initial horizontal velocity component, greatest first.



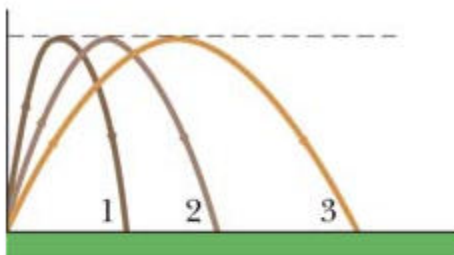
Path 1

Path 2

Path 3

1. Greatest
2. Second greatest
3. Third greatest

Ignoring the effects of air, rank the paths according to initial speed, greatest first.



Path 1

Path 2

Path 3

1. Greatest
2. Second greatest
3. Third greatest

Question 3

The figure shows four tracks (either half- or quarter-circles) that can be taken by a train, which moves at a constant speed. Rank the tracks according to the magnitude of a train's acceleration on the curved portion, greatest first. If multiple tracks 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 tracks rank equally, rank each as '1'.

Track 1 2 ▼

Track 2 1 ▼

Track 3 4 ▼

Track 4 2 ▼

1. Greatest
2. Second greatest
3. Third greatest
4. Fourth greatest

Question 4

While riding in a moving car, you toss an egg directly upward. Does the egg tend to land behind you, in front of you, or back in your hands if the car is **(a)** traveling at a constant speed, **(b)** increasing in speed, and **(c)** decreasing in speed?

While riding in a moving car, you toss an egg directly upward. Does the egg tend to land behind you, in front of you, or back in your hands if the car is **(a)** traveling at a constant speed, **(b)** increasing in speed, and **(c)** decreasing in speed?

- (a) back in your hands ▼
- (b) behind you ▼
- (c) in front of you ▼

Question 5

A boat is traveling upstream at 14 mph with respect to a river that is flowing at 6 mph (with respect to the ground). A man runs directly across the boat, from one side to the other, at 6 mph (with respect to the boat). The speed of the man with respect to the ground is:

A boat is traveling upstream at 14 mph with respect to a river that is flowing at 6 mph (with respect to the ground). A man runs directly across the boat, from one side to the other, at 6 mph (with respect to the boat). The speed of the man with respect to the ground is:

- 10 mph
- 14 mph
- 18.5 mph
- 21 mph
- 26 mph