

Chapters/ Sections will be Covered

Book: Fundamentals of Physics by David Halliday, Jearl Walker, and Robert Resnick

Chapter Title: Vectors

Sections:

- Unit Vectors

- Multiplying Vectors



Sample Quiz Question

Why is a unit vector used?

- a) To provide a direction only
- b) To provide both magnitude and direction
- c) To determine the magnitude of an original vector
- d) None of the above

Why the cross product of two same unit vectors is zero?

- a) Perpendicular to each other
- b) Parallel to each other
- c) Has a unit magnitude
- d) Does not affect the original vector

Sample Quiz Question

Why the dot product of two same unit vectors is unity?

- a) unit vectors are identical
- b) Perpendicular to each other
- c) Has a unit magnitude
- d) Parallel to each other

If A and B are two vectors when the dot product of \vec{A} and \vec{B} is $\vec{A} \cdot \vec{B} = \vec{B} \cdot \vec{A}$, which of the following statements is true?

- a) $\vec{A} \cdot \vec{B} = \vec{A} \times \vec{B}$
- b) $\vec{A} \times \vec{B} = -\vec{B} \times \vec{A}$
- c) $\vec{A} \times \vec{B} = A_x B_x + A_y B_y + A_z B_z$
- d) Does not have enough information

Sample Quiz Question

The alignment of the two vectors, \vec{A} and \vec{B} is opposite to each other. What is the best answer in this situation?

- a) A negative scalar value was found.
- b) A value and negative \hat{n} were determined.
- c) A magnitude and \hat{n} were determined
- d) A vector value was found.

Which product is suitable for describing rotational and directional effect or motion?

- a) Dot product of \vec{A} and \vec{B}
- b) Product of a scalar and \vec{A} and \vec{B}
- c) Product of a scalar and \vec{A} and addition of \vec{B}
- d) Cross product of \vec{A} and \vec{B}

Sample Quiz Question

A biker circles in a circle. Which vector application will be appropriate to describe the situation?

- a) Vector summation
- b) Vector and scalar multiplication
- c) Cross product
- d) Dot product

Four people are pushing a car stuck in the mud. What vector application works best for describing the situation?

- a) Scalar product
- b) Cross product
- c) Scalar and vector product
- d) Vector addition

Sample Quiz Question

A cross product is divided by a scalar. What physical meaning can be derived from here?

- a) It is not physical
- b) It is not possible
- c) Reduces its magnitude and preserves its direction
- d) Does not have enough information

Why is perpendicular projection used in vector products?

- a) Measures one vector goes in the direction of the other
- b) Measures the area of a parallelogram.
- c) Measures the magnitude of two vectors.
- d) Does not have enough information.

Probable Mid-term Questions: Lecture 5

What is the difference between a dot product and a cross product? Why does one require a unit vector?