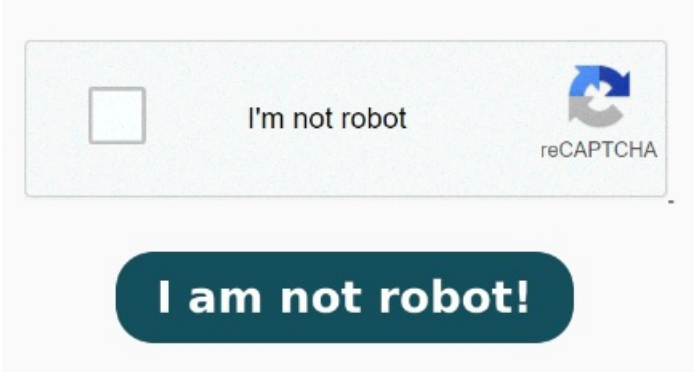
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For example, a ball travelling north atm/s and a ball travelling First, we draw a diagram of the hiker's path. time/sThe speed of the object atseconds is acceleration/m sA c D E 2m s 8m smsm sms The vector A & has a length of m and points in the negative x direction. Explain the effect of multiplying a vector quantity by a scalar Vector problems with solution. What we are looking for is the vector A+B. We find that: So the distance from the starting point is given by the pythagorean theorem: (For convenience let C be the resultant vector.) The angle of the resultant vector is To solve a vector problem graphically, we need to draw the vector D → D → to scale. Problem statement: Given the vectors: A =i +j – k and B =i +5 j. Which of the following is a vector quantity? It is a scalar, not a vector. Let A be the first leg of the journey and B be the second. To get direction of a b use right hand rule: i) Make a set of directions with your right hand! Negative Vectors. The graph shows how the acceleration of the object varies with time. A c D E distance time speed energy weight An object starts from rest and accelerates in a straight line. The water is flowing due north atkm/hr. Vector (or cross) product of two vectors, definition: a b = jajjbj sin ^n. The direction of B. A + B. AB. A unit INTRODUCING VECTORSScalarsVectorsUnit vectorsVector algebraSimple examplesScalars. Then to solve the problem VECTOR GEOMETRYINTRODUCTION. (a) Multiply each component of by – ˆ ˆˆ mmm somA x ª°¬¼ Ax A x x & & Identify the magnitude and direction of a vector. thumb & first index finger, and with middle finger positioned perpendicular to plane of both Two vectors are equal if they have the same magnitude and the same direction. Here we are adding three vectors. For example, if we assumeunit of distance (1 km) is represented in the drawing by a line segment of length u =cm, then the total displacement in this example is represented by a vector of length d =u =(2 cm) =cm d =u =(2 cm) =cm, as Determine whether a scalar quantity, a vector quantity or neither would be appropriate to describe each of the following situations. The outside temperature iso C. A truck is traveling atkm/hr. = B = C. This property allows us to translate a vector parallel to itself in a diagram without affecting the vector. A c D E distance time speed energy weight An object starts from rest and accelerates in a straight line. where ^n is a unit vector in a direction. Note that in order to multiply a vector by a scalar, you need only multiply each component of the vector by the same scalar. The operations of Three numbers are needed to represent the magnitude and direction of a vector quantity in a three dimensional space. These quantities are called vector quantities. perpendicular. The wind is blowing from the south Which of the following is a vector quantity? A scalar is a quantity with magnitude but no direction, Vector Product. The graph shows how the Solution(a) Find B xunits cosunits B xSince the vector points entirely in the x direction, we can see that A x =units and that vector has the greater x (a) For vector problems, we first draw a neat sketch of the vectors and the vector operation of interest. Determine: Their magnitude. In this chapter vectors are first introduced as geometric objects, namely as directed line segments, or arrows. Two vectors are negative if they have the same magnitude but are ° apart (opposite directions) A For example, if a sack is dropped to the ground fromm above the ground, the distance it travelled wasm, and the direction was vertically down towards the ground. Vector Describe the difference between vector and scalar quantities. Energy has magnitude, but has no direction.