

### Question 22179

The resultant of two vectors  $A(a_1, a_2, a_3)$  and  $B(b_1, b_2, b_3)$  by rules of adding vectors is a new vector  $C(a_1+b_1, a_2+b_2, a_3+b_3)$ . This also applies to more than one vector. Hence,

The resultant of vectors  $A(2; -1; 1), B(1; 1; 2), C(3; -2; 4)$  is  $D(6; -2; 7)$ .

The unit vector in given direction is a vector in given direction, which has length one. In order to get one from any vector, you should calculate the length (norm) of the vector, and divide coordinates of vector by it (so the length of the vector will become 1).

The length of this vector is  $|D| = \sqrt{6^2 + 2^2 + 7^2} = \sqrt{89}$ , so the unit vector in the direction of D is  $\vec{e} = \frac{1}{\sqrt{89}}(6; -2; 7)$ .