

Answer on Question #62096-Physics – Mechanics | Relativity

Add these vectors:

1511 at 35 degrees W of N + 8822 at 72 degrees W of S + 333 at 27 degrees S of W

Solution

Let Y be the north direction and X will be the eastern.

$$\mathbf{A} = 1511(-\sin 35, \cos 35) = (-866.674, 1237.74)$$

$$\mathbf{B} = 8822(-\sin 72, -\cos 72) = (-8390.22, -2726.15)$$

$$\mathbf{C} = 333(-\cos 27, -\sin 27) = (-296.705, -151.179)$$

$$\begin{aligned}\mathbf{A} + \mathbf{B} + \mathbf{C} &= (-866.674, 1237.74) + (-8390.22, -2726.15) + (-296.705, -151.179) \\ &= (-9553.6, -1639.59).\end{aligned}$$

The magnitude will be

$$\sqrt{(-9553.6)^2 + (-1639.59)^2} = 9693$$

The direction is

$$\tan^{-1} \frac{1639.59}{9553.6} = 9.7 \text{ degrees S of W}$$