

Mechanics I – Quiz 2 - G

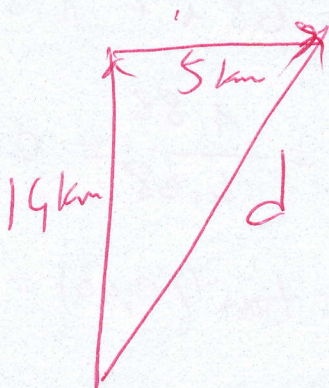
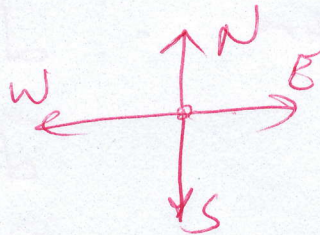
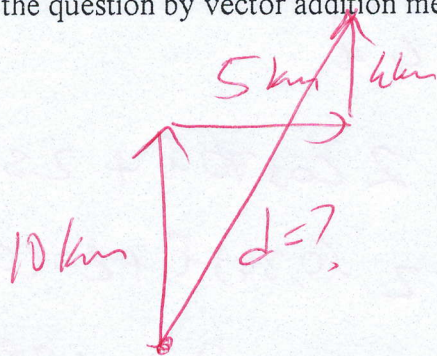
2019-2020

Full Name:

KEY

Choose one of the questions and answer. (2 marks)

1. A driver moves his car 10 km due North then 5 km to the East. Finally, he makes a *left turn* and travels another 4 km to the North. What is the magnitude of the displacement of the driver? Answer the question by vector addition method.

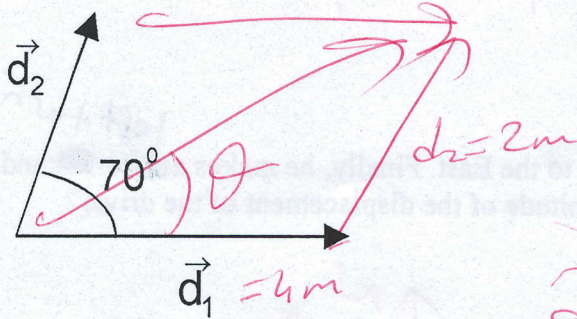


$$d^2 = 14^2 + 5^2$$

$$d = \sqrt{14^2 + 5^2}$$

$$d = 14.9 \text{ km}$$

2. Find the sum of the vectors shown in the figure. Show the angle of the resultant vector. $d_1 = 4 \text{ m}$ and $d_2 = 2 \text{ m}$



$$\theta = ?$$

$$\vec{d}_1 = 4\hat{i}$$

$$\vec{d}_2 = 2 \cos 70^\circ \hat{i} + 2 \sin 70^\circ \hat{j}$$

$$\vec{d}_2 = 2 \cdot (0,34)\hat{i} + 2 \cdot (0,94)\hat{j}$$

$$\vec{d}_2 = 0,68\hat{i} + 1,88\hat{j}$$

$$\vec{R} = \vec{d}_1 + \vec{d}_2 = 4,68\hat{i} + 1,88\hat{j}$$

$$\tan \theta = \frac{y}{x} = \frac{1,88}{4,68} = 0,40$$

$$\theta = \tan^{-1}(0,40) = 21,8^\circ$$