Exercise

Kinematics Part I

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2.1 Vectors and Scalars Quantities

A wild deer, seeking for food in the early morning walks 35 m east then 20 m north. After 2 hours, he walks another 12 m west then 6 m south. Find the wild deer's displacement.
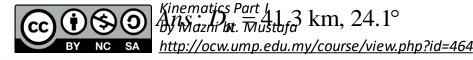
26.83 m, 31.3° NORTH or EAST

An airbus a380 is travelling from Kuala Lumpur to Canada with two different transit place. The first distance is to the east for 620 km and transit at Dubai. Then continue with the second trip to southeast (45°) for 440 km and transit at Denmark. Finally the third distance is at 53° south of west, for 550 km and arrived at Canada. Calculate the airbus total displacement?

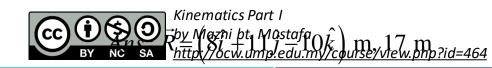$Ans: D_R = 960 \, \text{km}, \ -51°$

A cyclist begins his bicycle trip by 25 km southeast from his office. He stops and spend a night in a camping park nearby. On the second day, he start cycling 40 km in a direction 60° north of east, and he discovers a forest ranger's tower. Find the resultant displacement of the cyclist.

$Ans: D_x = 41.3$ km, 24.1°

Two displacements is in component term as shown below

$$\vec{D} = \left(6\hat{i} + 3\hat{j} - \hat{k}\right)\text{m} \quad \text{and} \quad \vec{E} = \left(4\hat{i} - 5\hat{j} + 8\hat{k}\right)\text{m}$$

Determine the magnitude of $2\vec{D} - \vec{E}$.

$Ans: \vec{R} = \left(8\hat{i} + 11\hat{j} - 10\hat{k}\right) \text{ m}, \ 17 \text{ m}$