

Answer on Question #62990 – Math – Trigonometry

Question

Jenny walks 4km on a bearing 052 degree. She changes direction and walks a further 5 km to finish due east of her starting point. Find how far jenny is from starting point.

Solution

First displacement is 4 km 52 degree north of east. Second displacement is 5 km east. Let y be the north direction and x be the east direction.

$$d_{1x} = 4 \cos 52^\circ$$

$$d_{1y} = 4 \sin 52^\circ$$

$$d_{2x} = 5$$

$$d_{2y} = 0$$

Total displacement has coordinates:

$$d_x = 5 + 4 \cos 52^\circ$$

$$d_y = 4 \sin 52^\circ$$

The distance from starting point is

$$d = \sqrt{(5 + 4 \cos 52^\circ)^2 + (4 \sin 52^\circ)^2} = 8.1 \text{ km.}$$

Answer: 8.1 km.