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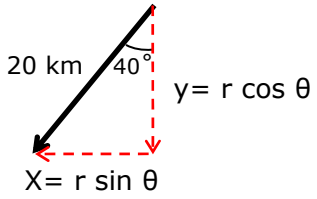
Drawing Vectors - Guided Lesson Explanation

Explanation # 1

Draw the indicated vector in a Southwesterly direction. Make sure that the length of the vector indicates the distance (r = 20 km).



We will insert negative sign "-" in both x and y-components as both are in direction of negative x-axis and negative y-axis.

$x = -20 \sin 40^\circ$

$= -20 \times .642$

$= -12.84$

$y = -20 \sin 40^\circ$

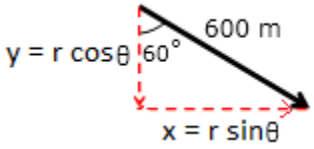
$= -20 \times .766$

$= -15.32$

So, x = -12.84 km and y = -15.32 km

Explanation # 2

Draw the indicated vector in a southeasterly direction. Make sure the distance is relatively represented (r = 600 m).



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We will insert negative sign "-" in y-component as it is in the direction of negative y-axis.

Time to find the x and y components:

$x = 600 \sin 60^\circ$

$= 600 \times 0.866$

$= 519.60$

$y = -600 \cos 60^\circ$

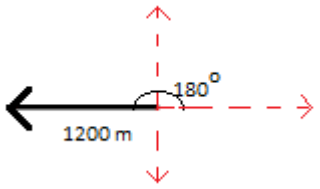
$= -600 \times .50$

$= -300.0$

So, x = 519.60 km and y = -300.0 km

Explanation # 3

Again, draw the vector. 90° indicates a right angle from the southerly direction or a full westerly direction. Remember that the length of vector should be relative to the distance (r = 1200 m).



There will be no y-component as the vector is in full westerly direction (i.e. negative y-axis).

$x = 1200 \cos 180^\circ$

$= 1200 \times (-1)$

$= -1200$

$y = 1200 \sin 180^\circ$

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= 1200 x 0

= 0

So, x = -1200 km and y = 0 km