

A vector A is 3 units long at 45°

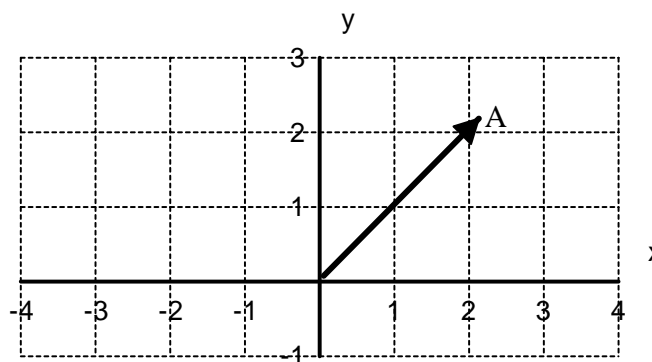
A vector B is 4 units long at 150°

Find the magnitude of the vector sum.

1) Draw vector A and identify its components.

$$A_x = 3\cos(45^\circ) = 2.121$$

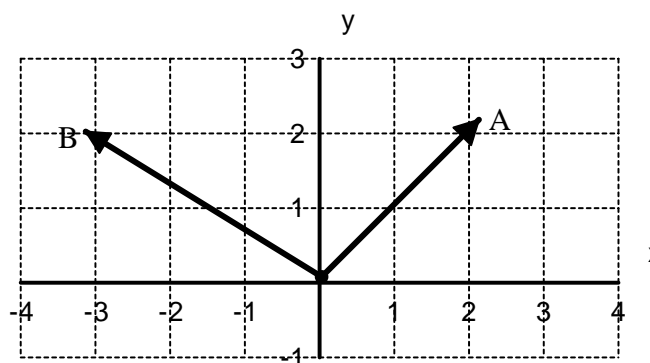
$$A_y = 3\sin(45^\circ) = 2.121$$



2) Draw vector B and identify its components.

$$B_x = 4\cos(150^\circ) = -3.464$$

$$B_y = 4\sin(150^\circ) = 2$$



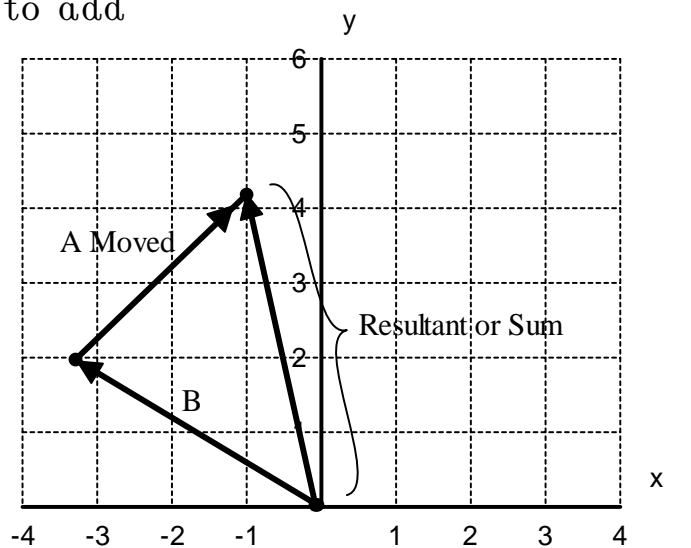
3) To add, means to place vector A at the tip of B.

Draw the sum to show you understand how to add vectors graphically.

4) Now add x and y components of A and B to find the sum.

$$R_x = 2.121 + (-3.464) = -1.343$$

$$R_y = 2.121 + 2 = 4.121$$



5) Now apply the Pythagorean Theorem to find the magnitude of the sum.

$$\text{magnitude of sum} = \sqrt{(-1.343)^2 + (4.121)^2} = 4.334$$