

Vectors Ex. 1

You paddle North at 5.30 m/s directly across a stream which is 140 m wide. The stream flows West and the boat reaches shore 92.5 m downstream. Find V_{stream} and the Resultant Vel.

$V_B = 5.30 \frac{\text{m}}{\text{s}} \text{ @ } N$
 $+ V_S = 3.50 \frac{\text{m}}{\text{s}} \text{ @ } W$
 $V_R = 6.35 \frac{\text{m}}{\text{s}} \text{ @ } 33.45^\circ$

$V = \frac{d}{t} \quad t = \frac{d}{V} = \frac{140\text{m}}{5.3\text{m/s}} = 26.42\text{s}$
 $V_S = \frac{d_S}{t} = \frac{92.5\text{m}}{26.42\text{s}} = 3.50 \frac{\text{m}}{\text{s}} \quad \tan \theta = \frac{3.5}{5.3}$
 $V_R^2 = 3.5^2 + 5.3^2 \quad \theta = \tan^{-1} \left(\frac{3.5}{5.3} \right)$
 $V_R = 6.35 \frac{\text{m}}{\text{s}} \quad \theta = 33.45^\circ$

choose the direction where you have d & V

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