

Vectors example 2b:

If the swimmer in the last example ( $V_s = 3.0 \text{ m/s}$ ) now want to end up directly across the river ( $V_w = 2.0 \text{ m/s}$ ):

a) in what direction must she head?

b) what will the resultant velocity now be?

c) How long will this take?

$V_s = 3.0 \frac{\text{m}}{\text{s}}$   $\odot$   $\left[ \text{E } 41.8^\circ \right]$

$+ V_w = 2.0 \frac{\text{m}}{\text{s}}$  South

$V_R = 2.24 \frac{\text{m}}{\text{s}}$   $\odot$  East

$c^2 = a^2 + b^2$   
 $3^2 = 2^2 + V_R^2$   
 $V_R = \sqrt{9 - 4} = 2.24 \frac{\text{m}}{\text{s}}$

$\sin \theta = \frac{o}{h} = \frac{2.0}{3.0}$   
 $\theta = \sin^{-1} \left( \frac{2}{3} \right)$   
 $\theta = 41.8^\circ$

$t = \frac{d}{v} = \frac{624 \text{m}}{2.24 \frac{\text{m}}{\text{s}}} = 278.6 \text{s}$

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