

Vectors example 2a:
 A swimmer heads directly across a 624 m wide river. If the velocity of the water is 2.0 m/s South and in still water she can swim 3.0 m/s .

a) How long does it take to cross?
 b) Where will she land (distance downstream)?
 c) What is the resultant velocity?

$V_s = 3.0 \frac{m}{s}$ East
 $+ V_w = 2.0 \frac{m}{s}$ South

$V_R = 3.61 \frac{m}{s}$ @ 33.69°
 $V_R = 3.61 \frac{m}{s}$
 $\tan \theta = \frac{2}{3}$
 $\theta = \tan^{-1}(\frac{2}{3})$
 $\theta = 33.69^\circ$

d) $t = \frac{d}{v} = \frac{624m}{3.0 \frac{m}{s}} = 208s$
 b) $d = vt = (2.0 \frac{m}{s})(208s)$
 $d = 416m$

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