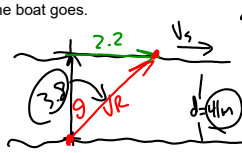
Extra Vector Problem

A boat heads directly across a 41 m wide river at a speed of 3.8 m/s due North. The current is flowing East at 2.2 m/s.

Find: a) Resultant Velocity b) How long to cross c) How far downstream the boat goes.



a) $V_B = 3.8 \frac{m}{s}$ North

$+ V_S = 2.2 \frac{m}{s}$ East

$= V_R = 4.39 \frac{m}{s}$ 30.07°

[N30.07E]

$\tan\theta = \frac{2.2}{3.8}$ $\quad V_R^2 = 3.8^2 + 2.2^2$

$\theta = 30.07°$ $\quad V_R^2 = 19.28 \ m^2/s^2$

$V_R = 4.39 \ m/s$

b) $t = \frac{d}{v} = \frac{41m}{3.8 \ m/s} = 10.8 s$

c) d downstream

$d = V_S t$

$d_S = (2.2 \frac{m}{s})(10.8 s)$

$d_S = 23.8 m$

Apr 17-9:31 AM