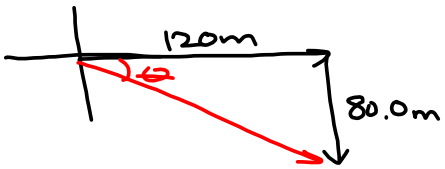
2.



$c^2 = a^2 + b^2$

$= 80^2 + 120^2$

$= 6400 + 14400$

$c^2 = 20800$

$c = 144\ m$

$\tan\theta = \frac{80.0m}{120m}$

$\theta = 34°$

$\vec{d} = 144m\ 124°$

$E34°S$

$\vec{V}_{ave} = \frac{\vec{d}}{t} = \frac{144m\ 124°}{40s} = 3.6\frac{m}{s}\ 124°$

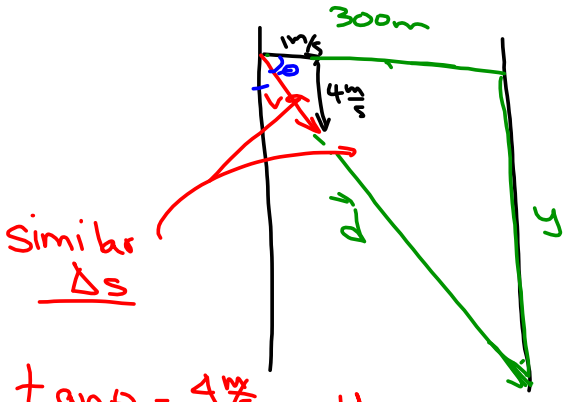
$V_{ave} = \frac{d}{t} = \frac{200m}{40.0s}$

$= 5.0 m/s$

Lessons from the Boat. . .

Vector Addition

10. A person rows a boat directly across a river that is 300 m wide with a speed of 1.00 m/s. If the river is flowing at 4.00 m/s
A. what will be the actual velocity of the boat? (4.12 m/s 14^0 to shore)
B. How long will it take to row the boat to the other side of the river? (300 s)
C. How far downstream does the boat go? (1.20×10^3 m)



Similar Δs

$c^2 = a^2 + b^2$
$= 1^2 + 4^2$
$= 17$
$c = 4.12\ m/s$

$\tan\theta = \frac{4}{1}$
$\theta = 76°$

a) $\vec{V} = 4.12\ m/s$ 76° downstream 14° to shore

$\tan\theta = \frac{4\ m/s}{1\ m/s} = \frac{y}{300m}$

c) $y = 1200m$

$c^2 = a^2 + b^2$
$= 300^2 + 1200^2$
$= 90000 + 1440000$
$= 1530000$
$c = 1236\ m$

b) $v_{ave} = \frac{d}{t}$

$4.12\ \frac{m}{s} = \frac{1236\ m}{t}$

$t = \frac{1236}{4.12} = 300\ s$

$d_x = v_x t$

$d_y = v_y t$

Independence of x and y

Homework: Questions 3-5 from More Vector Addition Questions