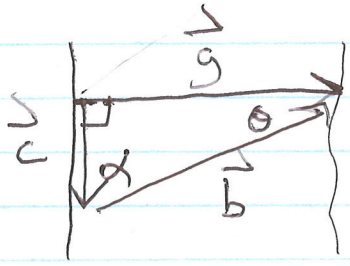
Chapter 4 Test pg 155

#7.

Let $\vec{g}$ = velocity of boat relative to ground (resultant vector)

$\vec{c}$ = current velocity

$\vec{b}$ = velocity of boat relative to water.



$\vec{g} = \vec{b} + \vec{c}$

$|\vec{b}| = 4$ m/s $|\vec{c}| = 1.5$ m/s.

$4^2 = |\vec{g}|^2 + 1.5^2$

$|\vec{g}| = \sqrt{13.75}$

$|\vec{g}| \doteq 3.71$ m/s

$\sin\theta = \frac{1.5}{4}$

$\theta \doteq 22°$

[illegible] upstream.

$t = \frac{d}{s}$

$t = \frac{650\text{ m}}{3.71\text{ m/s}}$

$t = 175.2$ seconds

or 2 mins, 55 seconds.

$\alpha = 68°$.

head 68° upstream.

or 22°–23° upstream instead of going "straight across"!