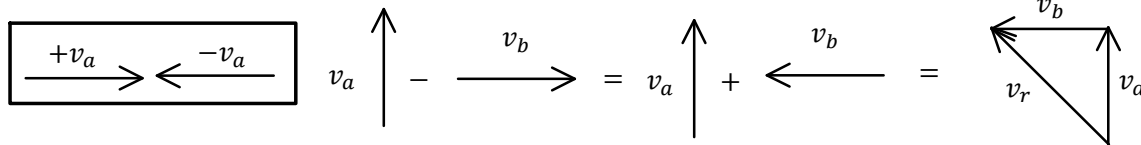
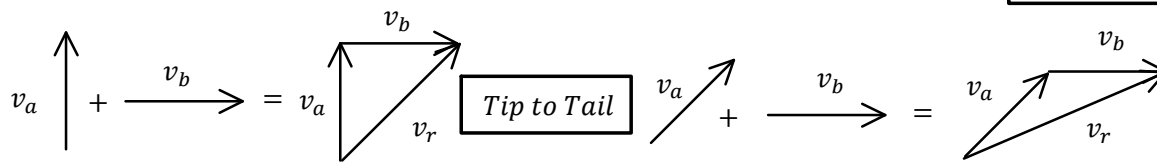
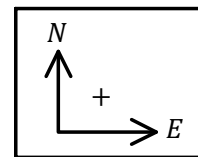


P11 - 1.5 - \vec{d} Resultant Vector Notes



Walk 8 m N, then 6 m E in 5 ss.

$a^2 + b^2 = c^2$
 $c = \sqrt{a^2 + b^2}$
 $c = \sqrt{6^2 + 8^2}$
 $c = 10$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$
 $\theta = \tan^{-1}\left(\frac{6}{8}\right)$
 $\theta = 36.9^\circ$

$v = \frac{d}{t}$
 $v = \frac{10}{5}$
 $v = 2 \frac{m}{s} \text{ } 36.9^\circ \text{ [EoN]}$

$s = \frac{d}{t}$
 $s = \frac{14}{5}$
 $s = 2.8 \frac{m}{s}$

$\vec{d} = 10 \text{ m } 36.9^\circ \text{ [EoN]}$

Walk 10 m 53° [NoE], then 5 m E.

$0 = h \sin \theta$
 $0 = H \sin \theta$
 $0 = 10 \sin 37^\circ$
 $0 = 6.02$

$c = \sqrt{a^2 + b^2}$
 $c = \sqrt{11.02^2 + 7.99^2}$
 $c = 13.6$

OR
Component Method

x	y
+6.02	+7.99
+5	0
+11.02	+7.99

; Pythag/Tan

W, S \rightarrow -ve!

$90^\circ - 53^\circ = 37^\circ$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$
 $\theta = \tan^{-1}\left(\frac{7.99}{11.02}\right)$
 $\theta = 35.9^\circ$

$A = H \cos \theta$
 $A = 10 \cos 37^\circ$
 $A = 7.99$

$6.02 + 5 = 11.02$

$\vec{d} = 13.6 \text{ m } 35.9^\circ \text{ [NoE]}$

Alt Int \angle 's =

$180^\circ - 53^\circ = 127^\circ$

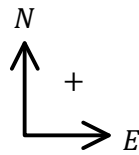
OR

$\vec{d} = 13.6 \text{ m}$

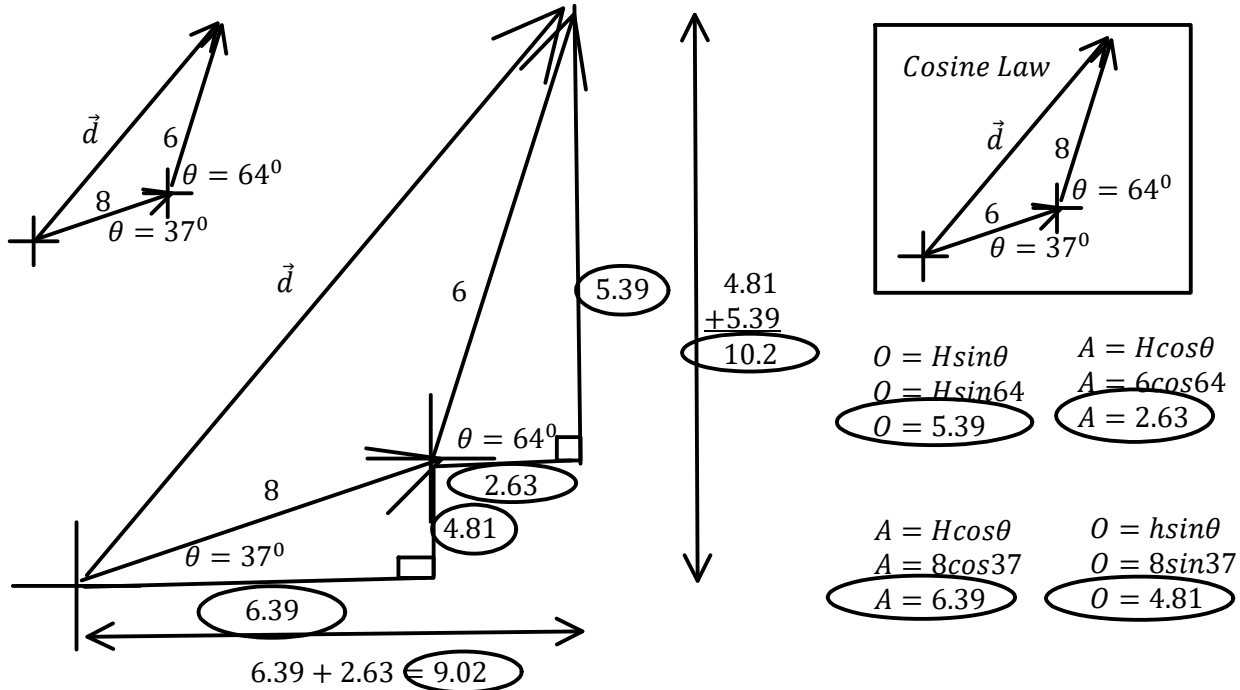
Cos Law SAS (OR Sin Law!)

$c^2 = b^2 + a^2 - 2ab \cos C$
 $c^2 = 5^2 + 10^2 - 2(10)(5) \cos 127^\circ$
 $c^2 = 185.18$
 $\sqrt{c^2} = \sqrt{185.8}$
 $c = 13.6$

P11 - 1.5 - \vec{d} , v_r , "a" Resultant Vector Notes



If you walk 8 m 37° [NoE], then 6 m 64° [NoE], what is your displacement?



Component Method

x	y
$h \cos \theta$	$h \sin \theta$
6.39	4.81
2.63	5.39
9.02	10.2

$c = \sqrt{a^2 + b^2}$
 $c = \sqrt{9.02^2 + 10.2^2}$
 $c = 13.62$

$\tan \theta = \frac{O}{A}$
 $\theta = \tan^{-1} \left(\frac{10.2}{9.02} \right)$
 $\theta = 48.5^\circ$

$\vec{d} = 13.62 \text{ m } 48.5^\circ \text{ [NoE]}$

W, S \rightarrow -ve!

Find v_r and "a" $a = \frac{\Delta v}{\Delta t}$

$v_i = 40 \frac{\text{m}}{\text{s}}$ $\Delta v = v_f - v_i$

$t = 5\text{s}$ $v_f = 30 \frac{\text{m}}{\text{s}}$

- = + ←

$v_r = 50$

$a^2 + b^2 = c^2$
 $c = \sqrt{a^2 + b^2}$
 $c = \sqrt{30^2 + 40^2}$
 $c = 50$

$\tan \theta = \frac{O}{A}$
 $\theta = \tan^{-1} \left(\frac{40}{30} \right)$
 $\theta = 53.13^\circ$

$a = \frac{\Delta v}{\Delta t}$
 $a = \frac{50}{5}$
 $a = 10 \frac{\text{m}}{\text{s}^2} 53.13^\circ \text{ WoS}$