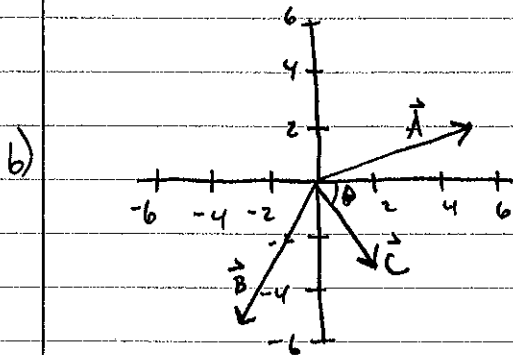


AP Physics Chap 3 E&P (13, 26, 44)

13)  $\vec{A} = 5\hat{i} + 2\hat{j}$        $\vec{C} = \vec{A} + \vec{B}$

$\vec{B} = -3\hat{i} - 5\hat{j}$

a)  $\vec{C} = 2\hat{i} - 3\hat{j}$



c)  $||\vec{C}|| = \sqrt{2^2 + (-3)^2}$   
 $= 3.6$

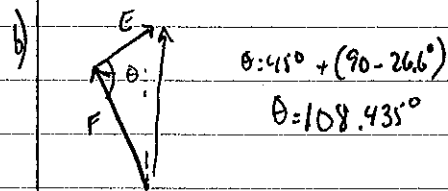
$\tan^{-1} \frac{3}{2} = \theta = 56.3^\circ$

$\vec{C} = 3.6$  at  $56.3^\circ$  below +x

26)  $\vec{F} = -1\hat{i} + 2\hat{j}$        $26.6^\circ$  left of +y

$\vec{E} = \hat{i} + \hat{j}$       ( $45^\circ$  right of +y)

a)  $\phi = 71.6^\circ$



law of cosines

$c^2 = a^2 + b^2 - 2ab \cos \theta$

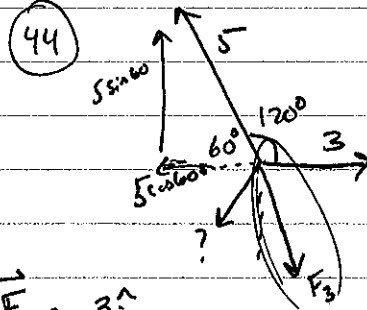
$c^2 = 2 + 5 - 2(\sqrt{2})(\sqrt{5}) \cos 108.435^\circ$

$||\vec{C}|| = 3$  +y (roughly) too lazy to show this

c)  $\vec{G} = \vec{E} + \vec{F}$   
 $= 3\hat{j}$

3 +y direction

just do components!



$\vec{F}_1 = 3\hat{i}$

$\vec{F}_2 = -2.5\hat{i} + 4.33\hat{j}$

$\vec{F}_1 + \vec{F}_2 = -0.5\hat{i} + 4.33\hat{j}$

you must pull opposite this

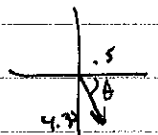
so  $\vec{F}_3$  (oops that doesn't sound right)  $\therefore$

$\vec{F}_3 = +0.5\hat{i} - 4.33\hat{j}$

$||\vec{F}_3|| = \sqrt{0.5^2 + (-4.33)^2}$

$||\vec{F}_3|| = 4.36$

$\vec{F}_3 = 4.36$   $83.4^\circ$  below +x



$\tan^{-1} \frac{4.33}{0.5}$   
 $83.4^\circ$