Physics 101Rec
Quiz#2-Sect#06
Chapter 3

Name: Key Id:

Two vectors are given by $\vec{A} = 2\hat{i} + 4\hat{j} - 6\hat{k}$, $\vec{B} = -2\hat{i} + 6\hat{k}$.

(a) Find the vector $\vec{C}$ in unit vector notation such that $\vec{A} + \vec{B} + 2\vec{C} = 0$.

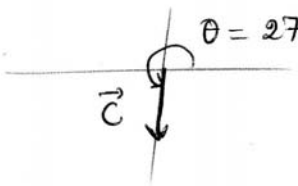
(b) What is the angle relative to the positive x-axis of the vector $\vec{C}$?

(c) Find the angle between the vectors $\vec{A}$ and $\vec{B}$.

a) $\vec{C} = -\frac{1}{2}(\vec{A} + \vec{B})$

$= -\frac{1}{2}(0\hat{i} + 4\hat{j} + 0\hat{k}) = -2\hat{j}$

b) $\theta = 270^\circ$ from the positive x-axis!



c) $\vec{A} \cdot \vec{B} = A\,B\cos\theta$

$\vec{A} \cdot \vec{B} = -4 - 36 = -40$

$A = \sqrt{4+16+36} = \sqrt{56} = 7.5$

$B = 6.3$

$-40 = 47.3\cos\theta$

$\theta = \cos^{-1}(-0.84) = 147.7^\circ$