GE 210 homework Quiz #1

Student Name: Model Answer

Student Number: _____

Section: _____

Q-1 A force is specified by the vector $\vec{F} = 8i - 4j + 6k$

Calculate the angle made by $\vec{F}$ with x And y axes.

50/50

Answer:

$\vec{F} = 8\vec{i} - 4\vec{j} + 6\vec{k}$

$\theta_x, \theta_y = ?$

$\vec{F} = F_x\vec{i} + F_y\vec{j} + F_z\vec{k}$

$F_x = 8, \quad F_y = -4, \quad F_z = 6$

$F^2 = (8)^2 + (-4)^2 + (6)^2$

$F^2 = 116$

$F = 10.77$ N 10

$\theta_x = \cos^{-1} l = \cos^{-1}\frac{F_x}{F} = \cos^{-1}\frac{8}{10.77}$ 20

$\theta_x = 42^\circ$

similarly,

$\theta_y = \cos^{-1} m = \cos^{-1}\frac{F_y}{F} = \cos^{-1}\frac{-4}{10.77}$ 20

$\theta_y = 111.8^\circ$