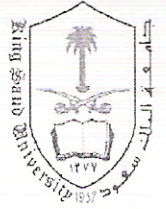


GE 210 homework Quiz #1



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:

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

$$\theta_x, \theta_y = ?$$

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

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

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

$$F^2 = 116$$

$$F = 10.77 \text{ N}$$

10

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

20

$$\theta_x = 42^\circ$$

similarly,

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

20

$$\theta_y = 111.8^\circ$$