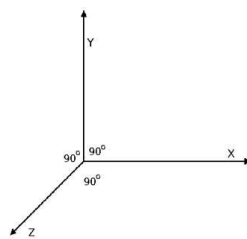


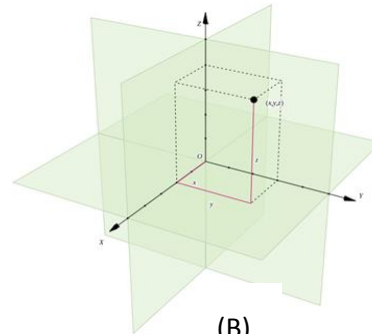
SOAL UJIAN UAS
KOMPUTER GRAFIS LANJUT
DOSEN : DIMAS ADITYO, ST.MT
WAKTU 90 MENIT, SIFAT : TERBUKA-OpenBook (KELAS,JUM'AT PAGI)

SOAL :

1. Jika Sebuah Layar Koordinat 3D seperti gambar dibawah ini .



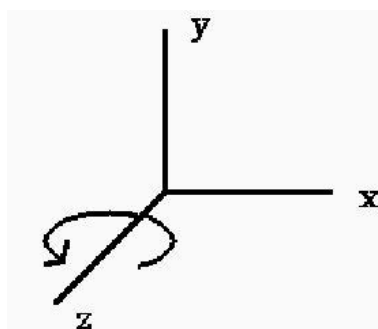
(A)



(B)

Jelaskan bagaimana saudara mengilustrasikan sebuah bangunan 3D pada gambar (B) jika mengalami rotasi pada sumbu X,Y,Z dengan rumus sbb :

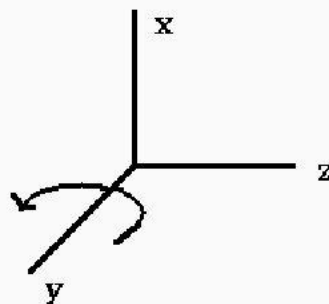
Rotasi pd Sumbu Z



$$\begin{aligned}x' &= x \cos q - y \sin q \\y' &= x \sin q + y \cos q \\z' &= z\end{aligned}$$

$$R_z(q) = \begin{pmatrix} \cos q & \sin q & 0 & 0 \\ -\sin q & \cos q & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

Rotasi pd Sumbu Y

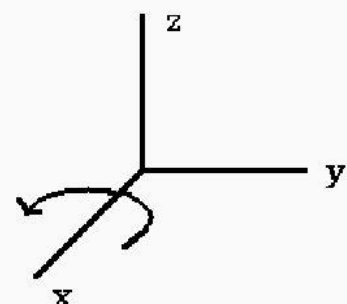


So we do the same replacement in equations :

$$\begin{aligned}z' &= z \cos q - x \sin q \\x' &= z \sin q + x \cos q \\y' &= y\end{aligned}$$

$$R_y(q) = \begin{pmatrix} \cos q & 0 & -\sin q & 0 \\ 0 & 1 & 0 & 0 \\ \sin q & 0 & \cos q & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

Rotasi pd Sumbu X



So we do the same replacement in the equations:

$$\begin{aligned}y' &= y \cos q - z \sin q \\z' &= y \sin q + z \cos q \\x' &= x\end{aligned}$$

$$R_x(q) = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos q & \sin q & 0 \\ 0 & -\sin q & \cos q & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

:: Selamat Mengerjakan ::