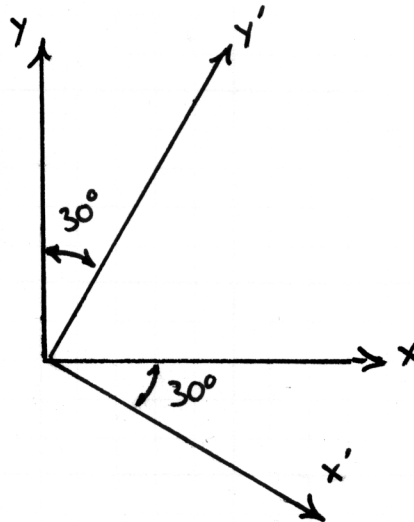


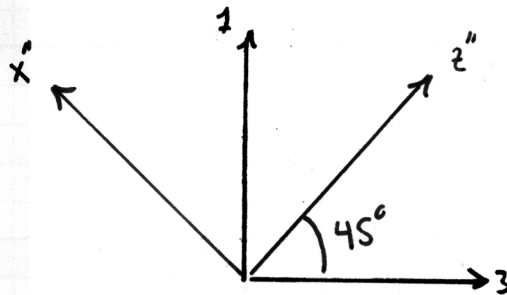
TRANSFORMATION MATRIX FOR A  $30^\circ$  CLOCKWISE ROTATION ABOUT THE Z-AXIS.

$$[T] = \begin{bmatrix} \cos \theta_{xx} & \cos \theta_{xy} & \cos \theta_{xz} \\ \cos \theta_{yx} & \cos \theta_{yy} & \cos \theta_{yz} \\ \cos \theta_{zx} & \cos \theta_{zy} & \cos \theta_{zz} \end{bmatrix}$$

$$= \begin{bmatrix} 0.866 & -0.5 & 0 \\ 0.5 & 0.866 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$



TRANSFORMING THE PRINCIPAL STATE OF STRESS  $45^\circ$  ABOUT THE Z-AXIS



$$[T] = \begin{bmatrix} \cos \theta_{x'1} & \cos \theta_{x'2} & \cos \theta_{x'3} \\ \cos \theta_{y'1} & \cos \theta_{y'2} & \cos \theta_{y'3} \\ \cos \theta_{z'1} & \cos \theta_{z'2} & \cos \theta_{z'3} \end{bmatrix} = \begin{bmatrix} 0.7071 & 0 & -0.7071 \\ 0 & 1 & 0 \\ 0.7071 & 0 & 0.7071 \end{bmatrix}$$