TEST 2

$$a=\begin{bmatrix}-2\\-2\\0\end{bmatrix},\ b=\begin{bmatrix}2\\-2\\0\end{bmatrix},\ c=\begin{bmatrix}-2\\4\\0\end{bmatrix}$$

$$\text{center} = (a+b+c)/3 = \begin{bmatrix}-2/3\\0\\0\end{bmatrix}$$

unit vector

$$x = b-a = \begin{bmatrix}4\\0\\0\end{bmatrix} = \begin{bmatrix}1\\0\\0\end{bmatrix} \qquad c-a = \begin{bmatrix}0\\6\\0\end{bmatrix}$$

$$z = \begin{bmatrix}4\\0\\0\end{bmatrix} \times \begin{bmatrix}0\\6\\0\end{bmatrix} = \begin{bmatrix}0\times0 - 0\times6\\0\times0 - 4\times0\\4\times6 - 0\times0\end{bmatrix} = \begin{bmatrix}0\\0\\24\end{bmatrix} = \begin{bmatrix}0\\0\\1\end{bmatrix}$$

unit vector

$$y = \begin{bmatrix}0\\0\\1\end{bmatrix} \times \begin{bmatrix}1\\0\\0\end{bmatrix} = \begin{bmatrix}0\times0 - 0\times1\\1\times1 - 0\times0\\1\times0 - 0\times0\end{bmatrix} = \begin{bmatrix}0\\1\\0\end{bmatrix}$$

unit vec Z unit vec X