

CG

10/11/17 p1

$$\begin{pmatrix} 1 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$C_1 = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$$

$$|C_1| = \sqrt{1^2 + 1^2 + 0^2} = \sqrt{2}$$

$$M = \begin{pmatrix} .6 & .8 & 0 \\ -.8 & .6 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$|C_1| = \sqrt{.6^2 + (-.8)^2 + 0^2} = \sqrt{-36 + 64 + 0} = \sqrt{28} = 1$$

$$C_1 \cdot C_2 = \begin{pmatrix} .6 \\ -.8 \\ 0 \end{pmatrix} \cdot \begin{pmatrix} .8 \\ .6 \\ 0 \end{pmatrix} = .48 - .48 + 0 = 0$$

$$C_1 \cdot C_3 = 0$$

$$C_2 \cdot C_3 = 0$$

$$|M| = 1$$

$$M = \begin{pmatrix} -6 & 8 & 0 \\ -8 & 6 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

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$$C_1, C_2 = 0$$

$$M \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} = \begin{pmatrix} -6 \\ -8 \\ 0 \end{pmatrix}$$

WHAT  $\begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$   
IS ROTATED TO  
 $C_2$  IS  $\begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} \dots$

$$|E_n| = 1$$

$\square$   $\rightarrow$  Vol = 1  
Vol AFTER  $M$  IS  $|M|$

$$\begin{pmatrix} -6 & 8 & 0 \\ -8 & 6 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} = \begin{pmatrix} 2.2 \\ 4 \\ 3 \end{pmatrix}$$

$$L = \sqrt{1^2 + 2^2 + 3^2} = \sqrt{14}$$

$$\sqrt{2.2^2 + 4^2 + 3^2} = \sqrt{4.84 + 16 + 9} = \sqrt{14}$$

$$\begin{pmatrix} 3 & 4 & 12 \\ \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \end{pmatrix}$$

$$3^2 + 4^2 = 5^2$$

$$5^2 + 12^2 = 13^2$$