Activity 2

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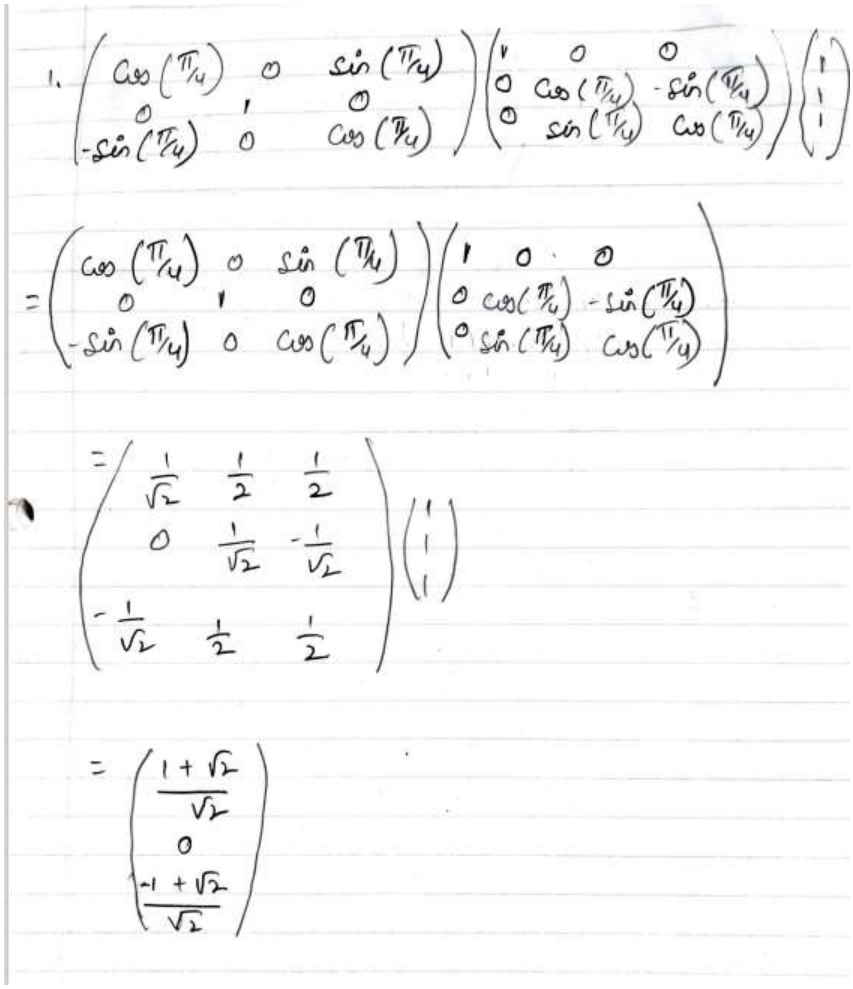
Checkpoint 1



Checkpoint 2

2.

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos(\pi/4) & -\sin(\pi/4) \\ 0 & \sin(\pi/4) & \cos(\pi/4) \end{pmatrix} \begin{pmatrix} \cos(\pi/4) & 0 & \sin(\pi/4) \\ 0 & 1 & 0 \\ -\sin(\pi/4) & 0 & \cos(\pi/4) \end{pmatrix} \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos(\pi/4) & -\sin(\pi/4) \\ 0 & \sin(\pi/4) & \cos(\pi/4) \end{pmatrix} \cdot \begin{pmatrix} \cos(\pi/4) & 0 & \sin(\pi/4) \\ 0 & 1 & 0 \\ -\sin(\pi/4) & 0 & \cos(\pi/4) \end{pmatrix}$$

$$\begin{pmatrix} \frac{1}{\sqrt{2}} & 0 & \frac{1}{\sqrt{2}} \\ \frac{1}{2} & \frac{1}{\sqrt{2}} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{1}{\sqrt{2}} & \frac{1}{2} \end{pmatrix} \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} = \begin{pmatrix} \sqrt{2} \\ \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{pmatrix}$$

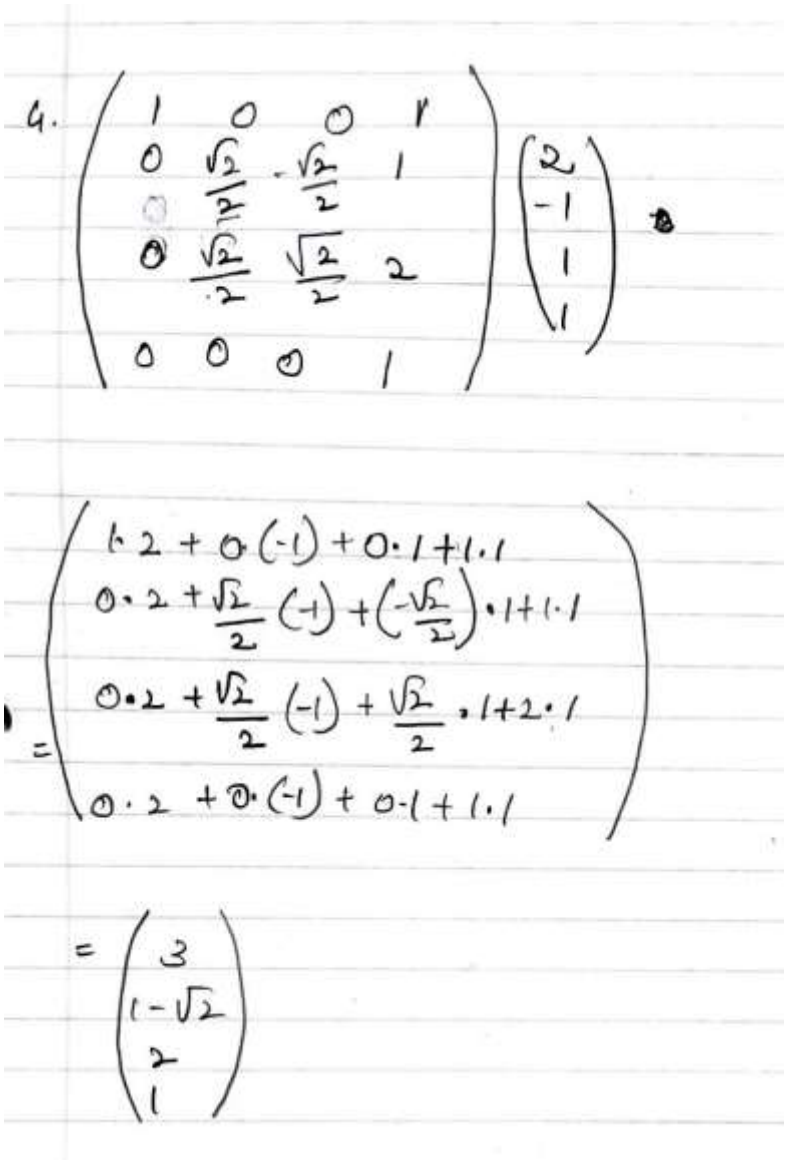
Checkpoint 3

3. $$\begin{pmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 2 \\ -1 \\ 1 \\ 1 \end{pmatrix} = ?$$

$$= \begin{pmatrix} 1\cdot 2 + 0\cdot(-1) + 0\cdot 1 + 1\cdot 1 \\ 0\cdot 2 + 1\cdot(-1) + 0\cdot 1 + 1\cdot 1 \\ 0\cdot 2 + 0\cdot(-1) + 1\cdot 1 + 2\cdot 1 \\ 0\cdot 2 + 0\cdot(-1) + 0\cdot 1 + 1\cdot 1 \end{pmatrix}$$

$$= \begin{pmatrix} 3 \\ 0 \\ 3 \\ 1 \end{pmatrix}$$

Checkpoint 4



Checkpoint 5

1.

2. 

3.

Checkpoint 6

When the Location of the camera focal length is changed and we see different perspective angles of the image. In this monkey image, The structure of the monkey shifts by zooming into the face and highlighting/focusing on different spots.

Checkpoint 7