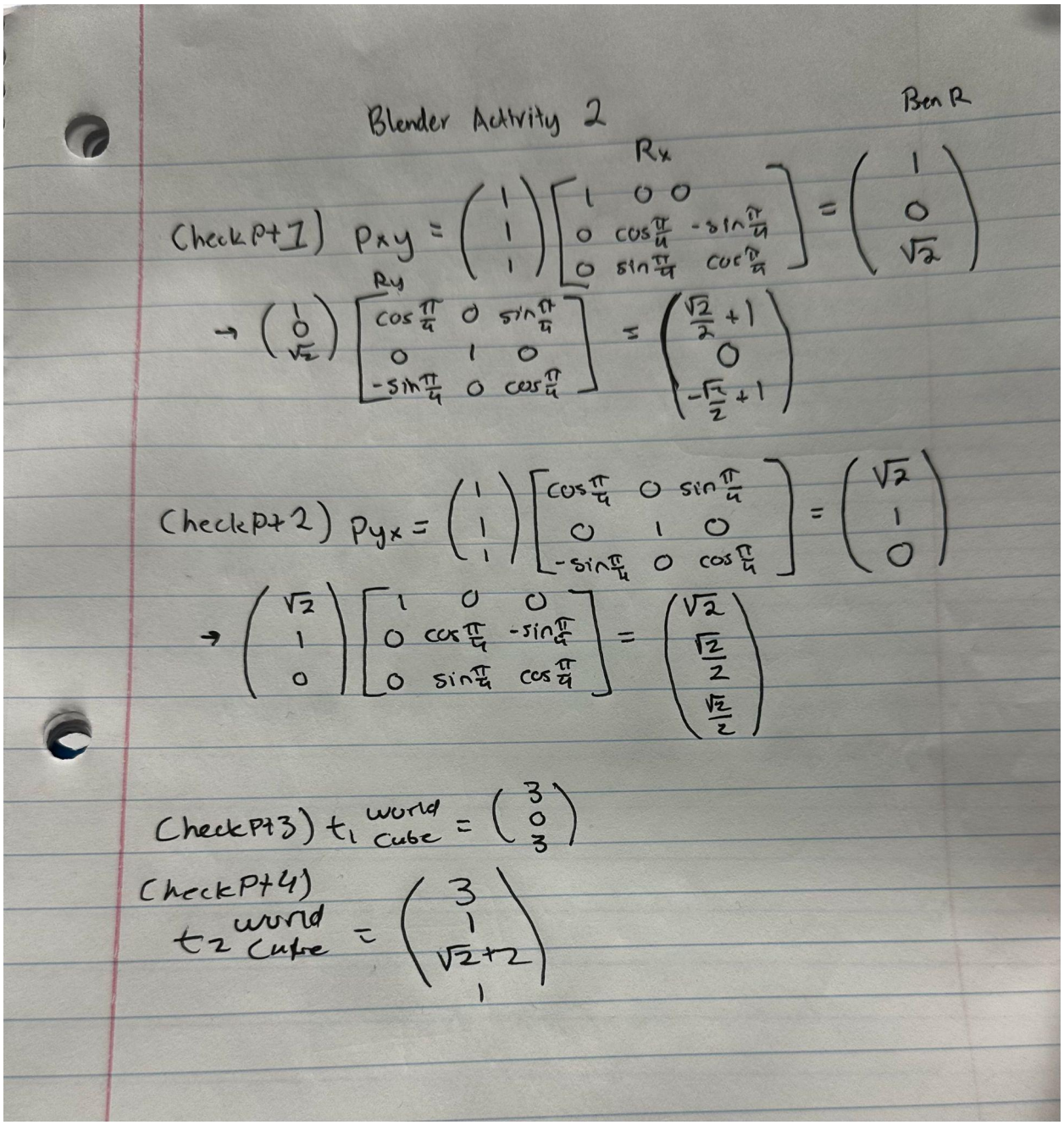
Ben Riesett
CSC 322



Blender Activity 2

Ben R

Rx

Checkpt 1) $P_{xy} = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} \begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos\frac{\pi}{4} & -\sin\frac{\pi}{4} \\ 0 & \sin\frac{\pi}{4} & \cos\frac{\pi}{4} \end{bmatrix} = \begin{pmatrix} 1 \\ 0 \\ \sqrt{2} \end{pmatrix}$

Ry

$\rightarrow \begin{pmatrix} 1 \\ 0 \\ \sqrt{2} \end{pmatrix} \begin{bmatrix} \cos\frac{\pi}{4} & 0 & \sin\frac{\pi}{4} \\ 0 & 1 & 0 \\ -\sin\frac{\pi}{4} & 0 & \cos\frac{\pi}{4} \end{bmatrix} = \begin{pmatrix} \frac{\sqrt{2}}{2}+1 \\ 0 \\ -\frac{\sqrt{2}}{2}+1 \end{pmatrix}$

Checkpt 2) $P_{yx} = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} \begin{bmatrix} \cos\frac{\pi}{4} & 0 & \sin\frac{\pi}{4} \\ 0 & 1 & 0 \\ -\sin\frac{\pi}{4} & 0 & \cos\frac{\pi}{4} \end{bmatrix} = \begin{pmatrix} \sqrt{2} \\ 1 \\ 0 \end{pmatrix}$

$\rightarrow \begin{pmatrix} \sqrt{2} \\ 1 \\ 0 \end{pmatrix} \begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos\frac{\pi}{4} & -\sin\frac{\pi}{4} \\ 0 & \sin\frac{\pi}{4} & \cos\frac{\pi}{4} \end{bmatrix} = \begin{pmatrix} \sqrt{2} \\ \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{pmatrix}$

Checkpt 3) $t_1^{\text{world}}{}_{\text{cube}} = \begin{pmatrix} 3 \\ 0 \\ 3 \end{pmatrix}$

Checkpt 4) $t_2^{\text{world}}{}_{\text{cube}} = \begin{pmatrix} 3 \\ 1 \\ \sqrt{2}+2 \\ 1 \end{pmatrix}$

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Checkpoint 5)
Render 1

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Render 2

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Render 3

Checkpoint 6)

The above 3 images are identical, because even though the camera gets moved farther away, the focal length is increased which results in the outputs being identical.

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Checkpoint 7)