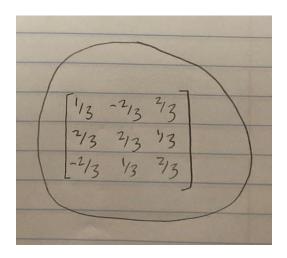
CSCI3302 HW0

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To find the inverse I put an identity matrix next to the matrix and used row operations to move the identity matrix to the left. The result is my answer. I included handwritten matrices in this problem since I was told I was allowed to on piazza.

Answer:



$R_{2} = R_{2} + R_{3} \begin{bmatrix} 1/3 & 7/3 & -7/3 & 1 & 0 & 0 \\ R_{3} = R_{3} + 2R_{1} & 0 & 1 & 1 & 0 & 1 & 1 \\ 0 & -1 & 2 & -2 & 0 & 1 \end{bmatrix}$ $\begin{cases} 1/3 & 7/3 & -7/3 & 1 & 0 & 0 \\ 0 & -1 & 2 & -2 & 0 & 1 \end{bmatrix}$ $\begin{cases} 1/3 & 7/3 & -7/3 & 1 & 0 & 0 \\ 0 & 0 & 3 & -2 & 1 & 2 \end{bmatrix}$ $\begin{cases} 1/3 & 7/3 & -7/3 & 1 & -7/3 & -7/3 \\ 0 & 0 & 3 & -2 & 1 & 2 \end{bmatrix}$ $\begin{cases} 1/3 & 7/3 & -7/3 & 7/3 & 7/3 \\ 0 & 0 & 1 & -7/3 & 3 & -2 & -2 \\ 0 & 0 & 1 & -7/3 & 3 & 3 & 3 \end{bmatrix}$ $\begin{cases} 1/3 & 7/3 & 7/3 & 7/3 & 7/3 \\ 0 & 0 & 1 & -7/3 & 1 & 3 & 3 \\ 0 & 0 & 1 & -7/3 & 1 & 3 & 3 \\ 0 & 0 & 1 & -7/3 & 1/3 & 3/3 \end{bmatrix}$ $\begin{cases} 1/3 & 7/3 & 7/3 & 7/3 & 7/3 \\ 0 & 1 & 0 & 7/3 & 7/3 \\ 0 & 1 & 0 & 7/3 & 7/3 & 7/3 \\ 0 & 1 & 0 & 7/3 & 7/3 \\ 0 & 1 & 0 & 7/3 & 7/3 \\ 0 & 1 & 0 & 7/3$	6	$\begin{bmatrix} 1/3 & 2/3 & -2/3 & 1 & 0 & 0 \\ -2/3 & 2/3 & 1/3 & 0 & 1 & 0 \\ 2/3 & 1/3 & 2/3 & 0 & 0 & 1 \end{bmatrix}$
$R_{3} = R_{3} + 2R_{1} 0 0 1$ $0 - 2 -2 0 $ $R_{3} = R_{3} + R_{2} 0 0 0 $ $R_{3} = R_{3} + R_{2} 0 0 0 $ $R_{1} = R_{1} + \frac{1}{3}R_{2} 0 1 $ $R_{1} = R_{1} + \frac{1}{3}R_{2} 0 $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{2} = R_{3} + \frac{1}{3}R_{2} $ $R_{3} = R_{3} + R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{2} = R_{3} + R_{2} $ $R_{3} = R_{3} + R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{1} = R_{1} + \frac{1}{3}R_{2} $ $R_{2} = R_{2} + \frac{1}{3}R_{2} $	Rz = Rz+Rz	13 2/3 - 2/3 1 0 0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	R3 = R3+ZR1	0 1 1 0 1 1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		[1/2 2/2 - 2/2 0 0]
$R_{1} = R_{1} + \frac{1}{3}R_{2} 1/3 2/3 -\frac{1}{3} -\frac{1}{$	F3 = R3+R2	0 1 1 0 1 1
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	R1 = P1+ 3P2	1/3 70 -4/3 1 73 7/3
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	P3=183	011011
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		001-3333
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		
P1=R1+4R3 [1 0 0 1/3 -1/3 2/3] 0 1 0 2/3 2/3 1/3		0 -13/3 3 -2 -2
P1=R1+4R3 [1 0 0 1/3 -1/3 2/3] 0 1 0 2/3 2/3 1/3	Rz-Rz-Rz	0 1 0 2/3 2/3 1/3
P1=R1+4R3		00 -73 1 7 3
0 1 0 2/3 2/3 1/3 0 6 1 -2/3 1/3 2/3	P, = P, +4 P3	100 1/2 -2/27
0 6 1 -4/3 1/3 2/3		0 1 10 2/2 2/2 1/2
73 13 13		0 6 1 -4 1/2 3/2
	0	13 13 13

$$\theta = \cos^{-1} \frac{v \cdot w}{||v|| ||w||}$$

$$u \cdot v = 3 * 4 - 3 * 3 - 1 * 3 = 0$$

$$||v|| = \sqrt{3^2 + 3^2 + -1^2} = \sqrt{19}$$

$$||w|| = \sqrt{4^2 + -3^2 + 3^2} = \sqrt{34}$$

$$\theta = \cos^{-1} \frac{0}{\sqrt{19}\sqrt{34}} = \frac{\pi}{2}$$