RH 1.10

MATH 5, Jones

Tejas Patel

Refrigerator Homework

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$$\begin{cases} 5I_1 + 2I_2 = 30 \\ 2I_1 + 7I_2 + 4I_3 = 20 \\ 4I_2 + 9I_3 + I_4 = 40 \\ 3I_1 + I_3 + 6I_4 = 10 \end{cases} = \begin{bmatrix} 6 & -1 & 0 & 0 & 30 \\ -1 & 9 & -4 & 0 & 20 \\ 0 & -4 & 7 & -2 & 40 \\ 0 & 0 & -2 & 7 & 10 \end{bmatrix} \rightarrow \text{RREF} \rightarrow \begin{bmatrix} 1 & 0 & 0 & 0 & 6.35 \\ 0 & 1 & 0 & 0 & 8.143 \\ 0 & 0 & 1 & 0 & 11.73 \\ 0 & 0 & 0 & 1 & 4.78 \end{bmatrix}$$ All quantities in SI Amperes

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$C_{n+1} = 0.93C_n + 0.05S_n$
$S_{n+1} = 0.95S_n + 0.07C_n$
If $C_0 = 800,000$ and $S_0 = 500,000$, $C_2 = 741720$, $S_2 = 558280$

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$$P = \begin{bmatrix} 0.97 & 0.05 & 0.10 \\ 0.00 & 0.90 & 0.05 \\ 0.03 & 0.05 & 0.85 \end{bmatrix} \qquad x_0 = \begin{bmatrix} 295 \\ 55 \\ 150 \end{bmatrix}$$

If $x_{n+1} = Px_n$, $\qquad x_3 = \begin{bmatrix} 311.543 \\ 58.255 \\ 130.202 \end{bmatrix}$