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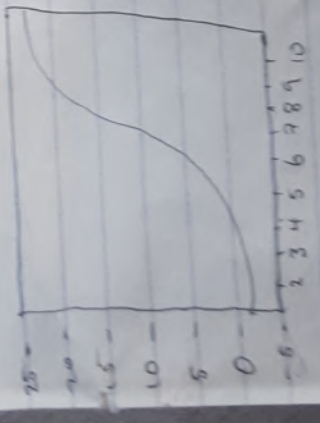
$$\begin{aligned} x_1 - 2x_2 - x_3 &= 10 \\ 3x_2 + x_4 &= 8 \\ x_1 - 4x_2 - 2x_4 &= 5 \\ -x_2 + 3x_3 + x_4 &= 7 \end{aligned}$$

$$A = \begin{bmatrix} 1 & -2 & -1 & 3 \\ 0 & 3 & 0 & 1 \\ 1 & 0 & -4 & -2 \\ 0 & -1 & 3 & 1 \end{bmatrix}$$

$$C = \begin{bmatrix} 10 \\ 8 \\ 5 \\ -7 \end{bmatrix} \quad \begin{aligned} \Delta &= 0.0267 \quad 0.2100 \\ &0.4933 \quad 0.6867 \\ &0.0933 \quad 0.1600 \\ &-0.3133 \quad -0.1067 \end{aligned}$$

$$\begin{aligned} &0.0400 \quad 0.0261 \\ &0.2267 \quad 0.0400 \\ &-0.3333 \end{aligned}$$

$$E = \begin{bmatrix} -1.0000 \\ 2.0000 \\ -3.0000 \\ 4.0000 \end{bmatrix}$$



The model $f(x) = \sin(0.25x)$
 $f(2) = 0.4933$
 $\Delta f = 0.16$
 $f = \sin(0.25\pi) = 0.7071$

$-\sqrt{2} \cos(x)$

Plot (1,4)

(1, y)

0 - 1.0000

0.1000 - 0.1553

0.2000 - 0.2024

0.3000 - 0.2413

0.4000 - 0.2726

0.5000 - 0.1961

0.6000 - 0.0146

0.7000 - 0.1738

0.8000 - 0.3661

0.9000 - 0.5679

1.0000 - 0.7727

1.1000 - 0.9824

1.2000 - 1.1966

1.3000 - 1.4150

1.4000 - 1.6375

1.5000 - 1.8637

1.6000 - 2.0935

1.7000 - 2.3266

1.8000 - 2.5628

1.9000 - 2.8021

2.0000 - 3.0441

2.1000 - 3.2887

2.2000 - 3.5358

2.3000 - 3.7851

2.4000 - 4.0366

2.5000 - 4.2903

2.6000 - 4.5458

2.7000 - 4.8030

2.8000 - 5.0618

2.9000 - 5.3221

3.0000 - 5.5840

3.1000 - 5.8470

3.2000 - 6.1116

3.3000 - 6.3770

3.4000 - 6.6433

3.5000 - 6.9106

3.6000 - 7.1787

3.7000 - 7.4474

3.8000 - 7.7162

3.9000 - 7.9866

4.0000 - 8.2568

5.0000 - 10.7692

5.1000 - 11.2324

5.2000 - 11.7012

5.3000 - 12.1712

5.4000 - 12.6433

5.5000 - 13.1162

5.6000 - 13.5900

5.7000 - 14.0647

5.8000 - 14.5403

5.9000 - 15.0168

6.0000 - 15.4942

6.1000 - 15.9725

6.2000 - 16.4516

6.3000 - 16.9315

6.4000 - 17.4122

6.5000 - 17.8937

6.6000 - 18.3759

6.7000 - 18.8588

6.8000 - 19.3425

6.9000 - 19.8269

7.0000 - 20.3120

7.1000 - 20.7978

7.2000 - 21.2843

7.3000 - 21.7715

7.4000 - 22.2594

7.5000 - 22.7479

7.6000 - 23.2370

7.7000 - 23.7267

7.8000 - 24.2170

7.9000 - 24.7079

8.0000 - 25.1994

7.6000 ~ 17.6058
e 7.7000 ~ 17.8356
o 7.8000 ~ 18.0713
m 7.9000 ~ 18.3009
8.0000 ~ 18.5284
8.1000 ~ 18.7538
8.2000 ~ 18.9720
8.3000 ~ 19.1847
8.4000 ~ 19.4166
8.5000 ~ 19.6331
8.6000 ~ 19.8472
8.7000 ~ 20.0541
8.8000 ~ 20.2016
8.9000 ~ 20.3808
9.0000 ~ 20.5930

$$\begin{aligned} x_2 - 2x_2 - x_3 + 3x_2 &= 10 \\ 2x + 3x_2 + x_4 &= 8 \\ x_2 - 4x_3 - 2x_2 &= 3 \\ -x_2 + 3x_3 + x_2 &= -7 \end{aligned}$$

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

$$B = \begin{pmatrix} 10 \\ 8 \\ 3 \\ -7 \end{pmatrix}$$

soln := solve(M,B)

$$\text{soln} = \begin{pmatrix} -1 \\ 2 \\ -3 \\ 4 \end{pmatrix}$$

$$2 \quad y = \sin(0.25t) + 2t + e^{-0.85t} - 2 \cos\left(\frac{\pi}{10}\right)t$$

evaluation over the complex plane yields

$$y = \sin(0.25t) + 2t + \exp(-.85 \cdot \exp(1)) - 2 \cos\left(\frac{\pi}{10}\right)t$$

by factoring, yields

$$y = \sin\left(\frac{1}{4} \cdot t\right) + 2 \cdot t + \exp\left(\frac{-17}{20} \cdot \exp(1)\right) - \frac{1}{2} \cdot \sqrt{2} \cdot (5 + \sqrt{5}) \cdot \left(\frac{1}{2}\right) \cdot t$$

$$0 \leq t \leq 10 \quad \Delta t = 0,1$$

expands to

$$0 \leq t \leq 10$$

