OCHIZOR RAMA EN ENGR
18/ENG05/041
MECHATRONICS ENGR

1. Using matlab (ANS)

$$A = \begin{pmatrix} 1 & -2 & -1 & 3 \\ 2 & 3 & 0 & 3 \\ 1 & -0 & -4 & 1 \\ 0 & -1 & 3 & 1 \end{pmatrix} \qquad C = \begin{pmatrix} 10 \\ 8 \\ 3 \\ -7 \end{pmatrix}$$

$B = A^{-1}$

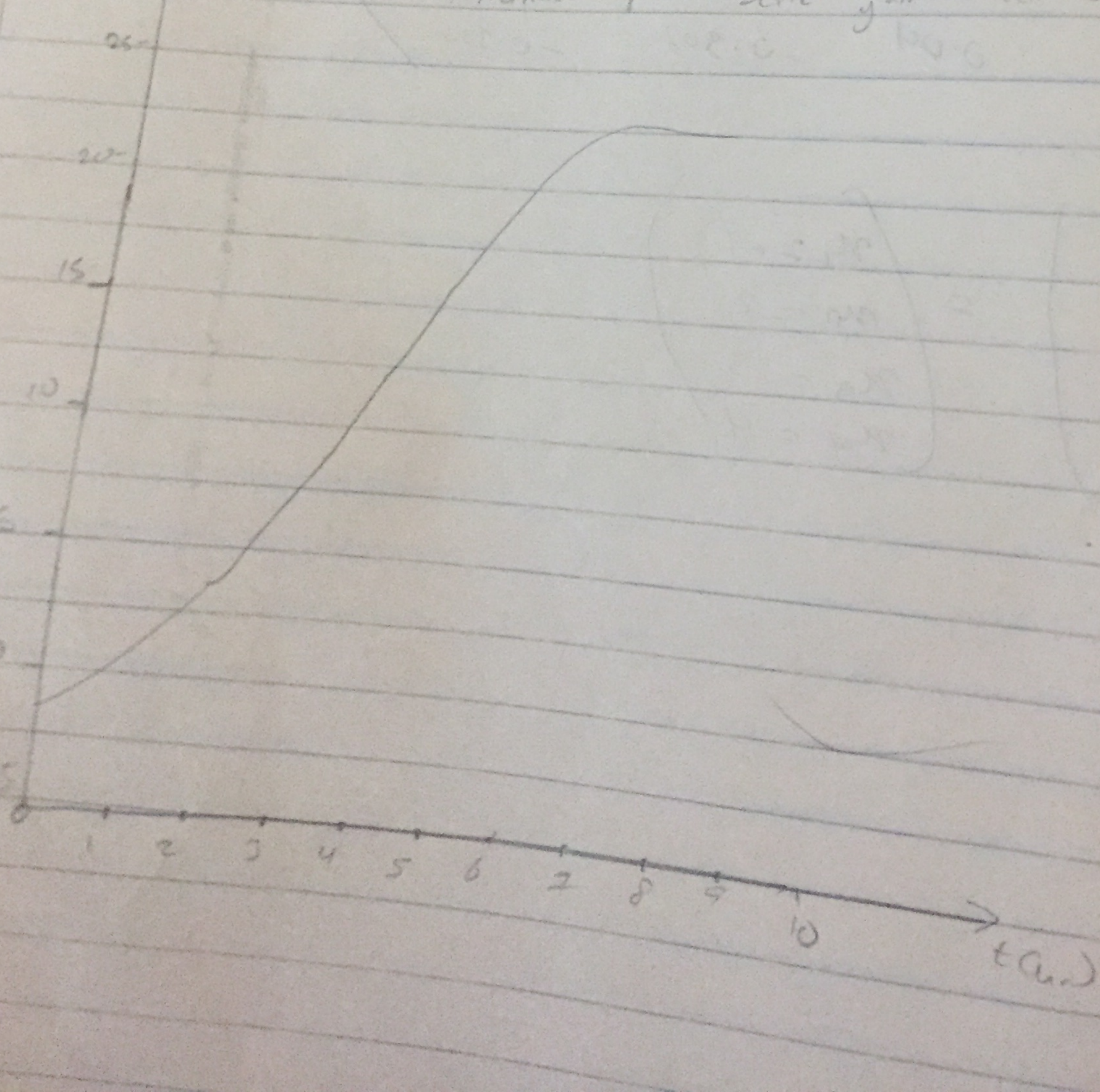
$$B = \begin{pmatrix} 0.027 & 0.24 & 0.493 & 0.667 \\ -0.093 & 0.16 & -0.227 & -0.333 \\ -0.107 & 0.04 & 0.027 & 0.333 \\ 0.227 & 0.04 & -0.307 & -0.333 \end{pmatrix}$$

$D = B \cdot C$

$$D = \begin{pmatrix} -1 \\ 2 \\ 3 \\ 4 \end{pmatrix} = \begin{pmatrix} x_1 = -1 \\ x_2 = 2 \\ x_3 = 3 \\ x_4 = 4 \end{pmatrix}$$

t	Y
9.0	20.6807
9.1	20.8832
9.2	21.0837
9.3	21.2810
9.4	21.4760
9.5	21.6694
9.6	21.8100
9.7	22.0482
9.8	22.2341
9.9	22.4175
10	22.5987

GRAPH OF Y AGAINST T Scale x_{cm} - 1cm to 1 unit
y_{cm} - 1cm to 5 units



2.

t	y	t	y	t	y	t	y
0	-1.000	2.3	3.7832	4.6	9.884	6.9	15.9151
0.1	-0.8555	2.4	4.0367	4.7	10.1529	7.0	16.1622
0.2	0.7024	2.5	4.2903	4.8	10.4234	7.1	16.4074
0.3	0.543	2.6	4.5458	4.9	10.6935	7.2	16.6509
0.4	0.3726	2.7	4.8030	5.0	10.9632	7.3	16.8925
0.5	0.1964	2.8	5.0619	5.1	11.2325	7.4	17.1322
0.6	0.0146	2.9	5.3223	5.2	11.5012	7.5	17.3900
0.7	0.1738	3.0	5.5841	5.3	11.7692	7.6	17.6058
0.8	0.3681	3.1	5.8473	5.4	12.0365	7.7	17.8396
0.9	0.5679	3.2	6.1116	5.5	12.3031	7.8	18.0713
1.0	0.7727	3.3	6.3770	5.6	12.5688	7.9	18.3009
1.1	0.9824	3.4	6.6433	5.7	12.8335	8.0	18.5284
1.2	1.1966	3.5	6.9106	5.8	13.0973	8.1	18.7538
1.3	1.4150	3.6	7.1787	5.9	13.3600	8.2	18.9770
1.4	1.6375	3.7	7.4474	6.0	13.6216	8.3	19.1979
1.5	1.8637	3.8	7.7167	6.1	13.8820	8.4	19.4166
1.6	2.0935	3.9	7.9866	6.2	14.1412	8.5	19.6331
1.7	2.326	4.0	8.2568	6.3	14.3990	8.6	19.8472
1.8	2.5628	4.1	8.5274	6.4	14.6555	8.7	20.0591
1.9	2.802	4.2	8.7982	6.5	14.9105	8.8	20.2686
2.0	3.0441	4.3	9.0692	6.6	15.1640	8.9	20.4758
2.1	3.2882	4.4	9.3402	6.7	15.4166		
2.2	3.5358	4.5	9.6112	6.8	15.6681		

Mathcad Professional - [math assignmnt 15th]

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Normal Arial 10

$$A := \begin{pmatrix} 1 & -2 & -1 & 3 \\ 2 & 3 & 0 & 1 \\ 1 & -4 & 0 & -4 \\ -1 & 3 & 0 & 1 \end{pmatrix} \qquad B := \begin{pmatrix} 10 \\ 8 \\ 3 \\ -7 \end{pmatrix}$$

$$X_1 := 5$$

$$X_2 := -1.25$$

$$X_3 := 2.75$$

$$X_4 := 1.75$$

$$A^{-1} = \begin{pmatrix} 0 & 0.333 & 0 & -0.333 \\ 0 & 0.125 & 0.125 & 0.375 \\ -1 & -0.042 & -1.375 & -2.458 \\ 0 & -0.042 & -0.375 & -0.458 \end{pmatrix}$$

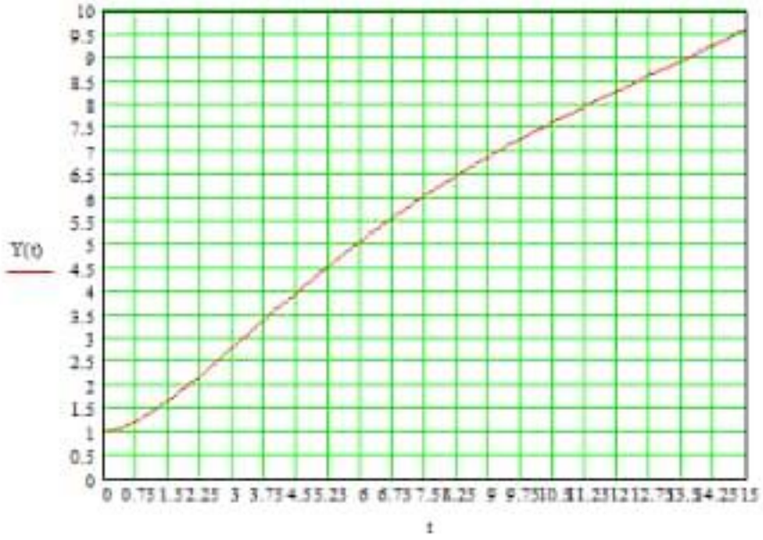
$$C := A^{-1} \cdot B$$

$$C = \begin{pmatrix} 5 \\ -1.25 \\ 2.75 \\ 1.75 \end{pmatrix}$$

$$Y(t) := \left(\sin(0.25t) + 2t + e^{-0.85t}\right) - 2\cos\left(\frac{180}{10}\right)t$$

$t := 0, .1 .. 15$

t	Y(t)
0	1
0.1	1.011
0.2	1.03
0.3	1.054
0.4	1.083
0.5	1.118
0.6	1.158
0.7	1.201
0.8	1.249
0.9	1.3
1	1.354
1.1	1.411
1.2	1.471
1.3	1.534
1.4	1.598
1.5	1.665



Math Graph Matrix Calculator Greek

Press F1 for help.

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