

Ex 11: 1 (14, 14)

$$x_1 = \frac{1}{4} (18t^2 + 4x_1 + 6t^2 x_2)$$

$$x_2 = \frac{1}{4} (14t^2 + (4 + 8t^2) x_2)$$

$$x_3 = x_3$$

1/10 $x_2 = \frac{1}{4 + 8t^2} (4x_2 - 14t^2)$

1/10 $x_1 = \frac{1}{4} \left(4x_1 - \frac{24t^2}{4 + 8t^2} x_2 - 18t^2 + \frac{84t^4}{4 + 8t^2} \right)$

0,5 $x_3 = x_3$

2/1 $V_1 = \frac{1}{4} (36t + 12t x_2) = 9t + 3t x_2$

0,1 $V_2 = \frac{1}{4} (18t + 4t x_2) = 7t + t x_2$

0,25 $V_3 = 0$

0,1 $\Pi_1 = 9 + 3x_2$ 0,5 $\Pi_2 = 7 + x_2$ 0,25 $\Pi_3 = 0$

— Euler
0,1 $U_1 = 9t + \frac{3}{4 + 8t^2} (4x_2 - 14t^2)$

0,1 $U_2 = 7 + \frac{t}{4 + 8t^2} (4x_2 - 14t^2)$

0,15 $U_3 = 0$

0,15 $\gamma_1 = 9 + \frac{3}{4 + 8t^2} (4x_2 - 14t^2)$

0,1 $\gamma_2 = 7 + \frac{1}{4 + 8t^2} (4x_2 - 14t^2)$

0,25 $\gamma_3 = 0$

2/1 a) $v_1 = 15$

$\Pi_1 = 15$

b) $v_1 = 9 + \frac{42}{6} = 15$

$\gamma_1 = 2$

2/1 x 4 $v_2 = 9$

$\Pi_2 = 9$

0,5 x 11 $v_2 = 7 + \frac{14}{6} = 14/3$

$\gamma_2 = 14/3$

0,25 $v_3 = 0$

$\Pi_3 = 0$

0,25 $v_3 = 0$

$\gamma_3 = 0$

4d) $F = \begin{pmatrix} 1 & \frac{3}{2}t^2 & 0 \\ 0 & 1+\frac{1}{2}t^2 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

0,5 $C = F^T \cdot F = \begin{pmatrix} 1 & 0 & 0 \\ \frac{3}{2}t^2 & 1+\frac{1}{2}t^2 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & \frac{3}{2}t^2 & 0 \\ 0 & 1+\frac{1}{2}t^2 & 0 \\ 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 1 & \frac{3}{2}t^2 & 0 \\ \frac{3}{2}t^2 & 10t^4 + \frac{1}{4}t^2 + 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

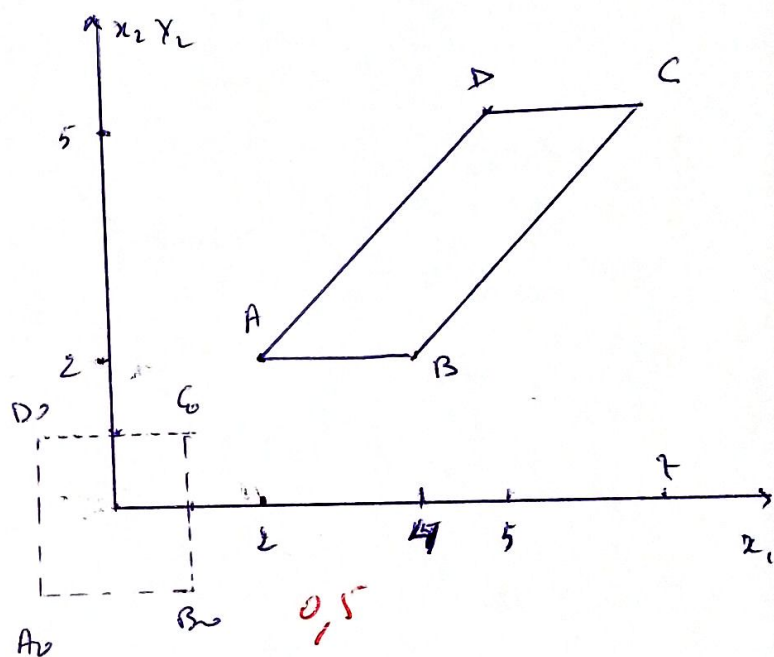
0,5 $E = \frac{1}{2}(C - I) = \frac{1}{2} \begin{pmatrix} 0 & \frac{3}{2}t^2 & 0 \\ \frac{3}{2}t^2 & 10t^4 + \frac{1}{4}t^2 & 0 \\ 0 & 0 & 0 \end{pmatrix}$

5d) $A_0 = \begin{pmatrix} -1 \\ -1 \\ 0 \end{pmatrix} \rightarrow A = \begin{pmatrix} 2 \\ 2 \\ 0 \end{pmatrix}$

0,5 $B_0 = \begin{pmatrix} 1 \\ -1 \\ 0 \end{pmatrix} \rightarrow B = \begin{pmatrix} 4 \\ 2 \\ 0 \end{pmatrix}$

0,5 $C_0 = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix} \rightarrow C = \begin{pmatrix} 7 \\ 5 \\ 0 \end{pmatrix}$

0,5 $D_0 = \begin{pmatrix} -1 \\ 1 \\ 0 \end{pmatrix} \rightarrow D = \begin{pmatrix} 5 \\ 5 \\ 0 \end{pmatrix}$



Ex n: 2 (6pts)

1,0 $\lambda(u_0) = \frac{dl}{db}$

1,0 $E(u, u) = \frac{1}{2} \frac{dl^2 - db^2}{db^2}$

1,0 $\delta_0 = \frac{dl - db}{db}$

1,0 $\lambda(u) = E(u, u) = \frac{1}{2} (\lambda^2(u) - 1) \Rightarrow \lambda(u) = \sqrt{2E(u, u) + 1}$

1,0 $\delta(u) = \lambda(u) - 1 = \sqrt{2E(u, u) + 1} - 1$