

Supplementary problems: 10.2 # 1, 3, 5, 13, 14, 21, 31, 32, 35

Quiz: 10.2

Compulsory problems:

Solve the following initial value problems

(1) [10 pts.]

$$\frac{d\vec{x}}{dt} = \begin{pmatrix} 1 & -1 \\ 1 & -3 \end{pmatrix} \vec{x}; \quad \vec{x}(0) = \begin{pmatrix} 0 \\ 2\sqrt{3} \end{pmatrix}$$

(2) [10 pts.]

$$\frac{d\vec{x}}{dt} = \begin{pmatrix} 1 & -1 \\ 1 & 3 \end{pmatrix} \vec{x}; \quad \vec{x}(0) = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$$

(3) [10 pts.]

$$\frac{d\vec{x}}{dt} = \begin{pmatrix} 1 & -1 \\ 1 & 1 \end{pmatrix} \vec{x}; \quad \vec{x}(0) = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

Your homework raw score is: $\frac{n}{2m} \cdot M + \left(1 - \frac{n}{2m}\right) \cdot N = N + \frac{n}{2m}(M - N)$. For this homework, $M = 30$, $m = 9$, N is the number of compulsory problems you get correct, and n is the number of supplementary problems you complete. It should be noted that for the supplementary problems I will be looking for **full completion**, but I won't take off points for mistakes.