

H29 (Math)

URL: <https://batapara.com/archives/handai-material-h29.html/>

1.(1) eigenvalue and eigenvector

$$\begin{aligned} \begin{pmatrix} 1 \\ -1 \\ 1 \end{pmatrix} & \text{ for } \lambda = -1 \\ \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} & \text{ for } \lambda = 1 \\ \begin{pmatrix} 4 \\ 2 \\ 1 \end{pmatrix} & \text{ for } \lambda = 2 \end{aligned}$$

For diagonalization, use:

$$B = \begin{pmatrix} 1 & 1 & 4 \\ -1 & 1 & 2 \\ 1 & 1 & 1 \end{pmatrix} \quad \text{and} \quad B^{-1} = \frac{1}{6} \begin{pmatrix} 1 & -3 & 2 \\ -3 & 3 & 6 \\ 2 & 0 & -2 \end{pmatrix}$$

1.(2) $a_n = 2 + 2^n$ for $n \in \mathcal{Z}_{\geq 0}$

2.(1) $(y - 4)^2 + x^2 = 2^2$

2.(2) $y = -\frac{1}{\sqrt{3}}x + 4\left(1 + \frac{1}{\sqrt{3}}\right)$

2.(3) $32\pi^2$

2.(4) $32\pi^2$

3.(1) Abbr.¹

3.(2) Abbr.

3.(3) $P(t) = \frac{1}{T_0} \sum_{-\infty}^{\infty} \exp\left(i\frac{2\pi}{T_0}nt\right)$

3.(4) Abbr.

4.(1) $z = \frac{\pm 1 \pm i}{\sqrt{2}}$ (double sign correspond)

4.(2) $\frac{\sqrt{2}}{4}\pi$?

4.(3) Not yet.

¹“Abbr.” is the abbreviation of “abbreviation”