

เฉลยการบ้านวิชา

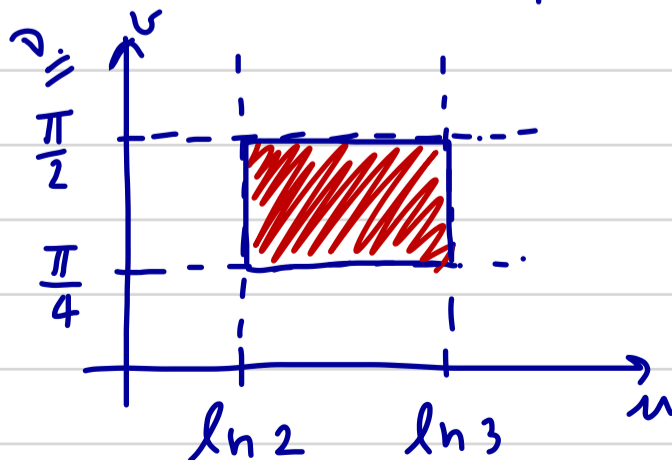
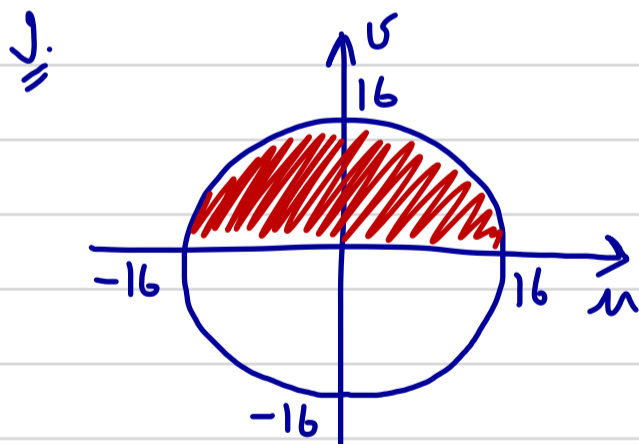
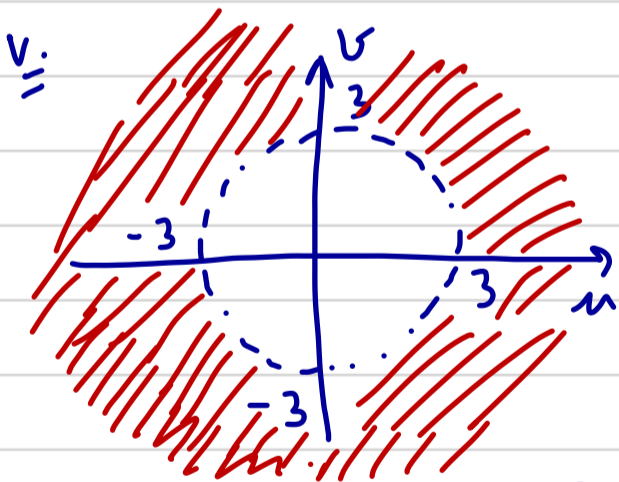
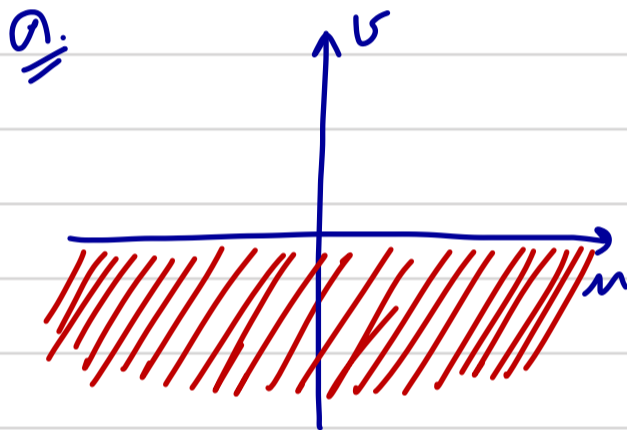
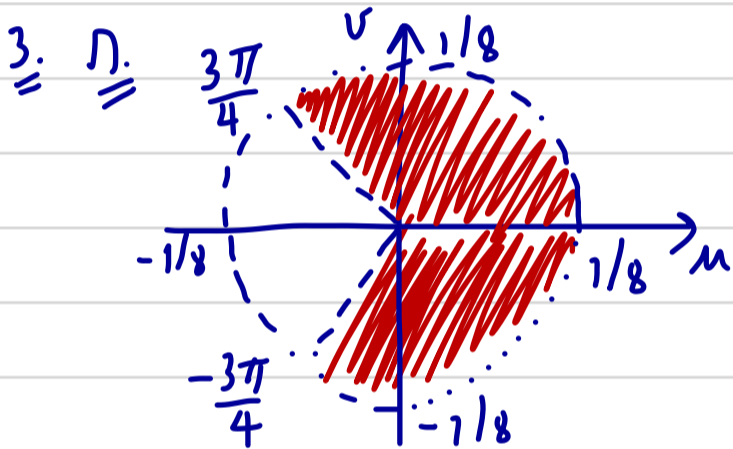
EE Math II ครั้งที่ 2

1. eigenvalue (λ) คือ 3, -4

$$E_{\lambda=3} = \text{span} \left\{ \begin{bmatrix} -2 \\ 1 \\ 5 \end{bmatrix} \right\} \text{ ว่าเป็น eigenvector คือ } \begin{bmatrix} -2 \\ 1 \\ 5 \end{bmatrix}$$

$$E_{\lambda=-4} = \text{span} \left\{ \begin{bmatrix} 1 \\ 1 \end{bmatrix} \right\} \text{ ว่าเป็น eigenvector คือ } \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

2. ก. เป็น v. ไม่เป็น ค. ไม่เป็น



$$4. \quad n. \quad 0$$

$$v. \quad 0$$

$$a. \quad 0$$

$$j. \quad j2\pi \ln(4)$$

$$d. \quad j\pi [\cos(0.5) - \sin(0.5)]$$

$$5. \quad n. \quad \frac{1}{v}$$

$$v. \quad \frac{1}{v}$$

$$6. \quad n. \quad R=1$$

$$v. \quad R = \frac{\sqrt{2}}{4}$$

$$a. \quad R = \frac{1}{128}$$

$$7. \quad n. \quad f(z) = e^{-2z} = 1 - 2z + 2z^2 - 4\frac{z^3}{3} + \dots$$

$$v. \quad f(z) = \sin z = 1 - \frac{(z - \frac{\pi}{2})^2}{2!} + \frac{(z - \frac{\pi}{2})^4}{4!} - \frac{(z - \frac{\pi}{2})^6}{6!} + \dots$$

$$a. \quad f(z) = \frac{1}{1-z^3} = 1 + z^3 + z^6 + z^9 + \dots$$

$$8. \quad n. \quad f(z) = 1 + z^3 + z^6 + z^9 + z^{12} + \dots \quad \text{valid } |z| < 1 \quad (\text{Taylor series})$$

$$f(z) = -\frac{1}{z^3} - \frac{1}{z^6} - \frac{1}{z^9} - \frac{1}{z^{12}} - \frac{1}{z^{15}} - \dots \quad \text{valid } |z| > 1 \quad (\text{Laurent series})$$

$$v. \quad f(z) = z^2 + z^6 + z^{10} + z^{14} + z^{18} + \dots \quad \text{valid } |z| < 1 \quad (\text{Taylor series})$$

$$f(z) = -\frac{1}{z^2} - \frac{1}{z^6} - \frac{1}{z^{10}} - \frac{1}{z^{14}} - \frac{1}{z^{18}} - \dots \quad \text{valid } |z| > 1 \quad (\text{Laurent series})$$

$$\underline{9} \quad \underline{n} \quad -\frac{2\pi}{3}$$

$$\underline{v} \quad -4\pi j$$