

find A^3

$$A = \begin{pmatrix} -5 & 4 \\ 0 & -2 \end{pmatrix}$$

$$A^2 = A \cdot A = \begin{pmatrix} -5 & 4 \\ 0 & -2 \end{pmatrix} \begin{pmatrix} -5 & 4 \\ 0 & -2 \end{pmatrix}$$

$$1 \text{ row } 1 \text{ col } (-5)(-5) + (4)(0) = 25 + 0 = 25$$

$$1 \text{ row } 2 \text{ col } (-5)(4) + (4)(-2) = -20 - 8 = -28$$

$$2 \text{ row } 1 \text{ col } (0)(-5) + (-2)(0) = 0 + 0 = 0$$

$$2 \text{ row } 2 \text{ col } (0)(4) + (-2)(-2) = 0 + 4 = 4$$

$$A^2 = \begin{pmatrix} 25 & -28 \\ 0 & 4 \end{pmatrix}$$

$$A^3 = A^2 \cdot A$$

$$A^2 A^3 = \begin{pmatrix} 25 & -28 \\ 0 & 4 \end{pmatrix} \cdot \begin{pmatrix} -5 & 4 \\ 0 & -2 \end{pmatrix}$$

$$1 \text{ row } 1 \text{ col } (25)(-5) + (-28)(0) = -125 + 0 = -125$$

$$1 \text{ row } 2 \text{ col } (25)(4) + (-28)(-2) = 100 + 56 = 156$$

$$2 \text{ row } 1 \text{ col } (0)(-5) + (4)(0) = 0 + 0 = 0$$

$$2 \text{ row } 2 \text{ col } (0)(4) + (4)(-2) = 0 - 8 = -8$$

$$A^3 = \begin{pmatrix} -125 & 156 \\ 0 & -8 \end{pmatrix}$$