1-7

September 14, 2025

"Find $A^2\ A^{-2}\ A^{-k}$ (where k is any integer) by inspection."

9

$$A = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ 0 & \frac{1}{3} & 0 \\ 0 & 0 & \frac{1}{4} \end{bmatrix}$$

Compute the indicated quantity.

13

$$\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}^{39}$$

Determine by inspection whether the matrix is invertible.

19

$$\begin{bmatrix} 0 & 6 & -1 \\ 0 & 7 & -4 \\ 0 & 0 & -2 \end{bmatrix}$$

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$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & -5 & 0 & 0 \\ 4 & -3 & 4 & 0 \\ 1 & -2 & 1 & 3 \end{bmatrix}$$

Find all values of the unknown constants for which A is symetric.

25

$$A = \begin{bmatrix} 4 & -3 \\ a+5 & -1 \end{bmatrix}$$

Find all values of x for which A is invertible.

27

$$A = \begin{bmatrix} x-1 & x^2 & x^4 \\ 0 & x+2 & x^3 \\ 0 & 0 & x-4 \end{bmatrix}$$