

Problems of Determinants and inverse matrix

1) Find out the values of the parameter q for which $|A| = 0$.

$$A = \begin{pmatrix} 1 & 1 & 4 \\ -2 & q & 4 \\ 2 & 2 & q \end{pmatrix}$$

2) Calculate the values of the parameter k for which the A matrix is invertible.

$$A = \begin{pmatrix} -2 & 9 & k \\ 1 & -4 & 2 \\ 1 & k & 6 \end{pmatrix}$$

3) **a)** Calculate the values of the parameter p for which the A matrix isn't invertible. **b)** Find out the inverse matrix when the parameter value is -1 .

$$A = \begin{pmatrix} 1 & -1 & -2 \\ 6 & p & -3 \\ -1 & 1 & p \end{pmatrix}$$

4) Find out the values of the parameter p for which $|A| = 0$.

$$A = \begin{pmatrix} 1 & 0 & -1 \\ 0 & p & -2 \\ -9 & 4 & p \end{pmatrix}$$

5) Calculate the values of the parameter p for which the A matrix is invertible.

$$A = \begin{pmatrix} 1 & -1 & -1 \\ 3 & p & 6 \\ -3 & 3 & p \end{pmatrix}$$

6) **a)** Calculate the values of the parameter n for which the A matrix isn't invertible. **b)** Find out the inverse matrix when the parameter value is -4 .

$$A = \begin{pmatrix} 1 & -1 & -1 \\ -1 & n & -7 \\ -4 & 4 & n \end{pmatrix}$$

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Answers:

1) $q_1 = 8, \quad q_2 = -2$

2) $k \neq -6$ and $k \neq -2$

3) a) $p_1 = -6, \quad p_2 = 2$ b) $A^{-1} = \frac{-1}{15} \begin{pmatrix} 4 & -3 & 1 \\ 9 & -3 & -9 \\ 5 & 0 & 5 \end{pmatrix}$

4) $p_1 = 8, \quad p_2 = 1$

5) $p \neq 3$ and $p \neq -3$

6) a) $n_1 = 1, \quad n_2 = 4$ b) $A^{-1} = \frac{1}{40} \begin{pmatrix} 44 & -8 & 3 \\ 24 & -8 & 8 \\ -20 & 0 & -5 \end{pmatrix}$