

1-(d)

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$1 \leq i < j \leq n$ 인 모든 i 와 j 에 대하여 $\lambda_i \neq \lambda_j$ 면 determinant of A 가 non-zero 이다.

2.

Let A^+ be a pseudo inverse of A .

From the definition of pseudo inverse, the following properties hold.

$$* AA^+A = A \quad * A^+AA^+ = A^+$$

When A has linearly independent columns, A^+ can be computed as $A^+ = (A^T A)^{-1} A^T$.

By using this condition, we can compute w as follows

$$y = Aw$$

$$A^T y = A^T A w$$

$$(A^T A)^{-1} A^T y = w$$

$$A^+ y = w$$

1-(e)

The determinant of A is non-zero $\Leftrightarrow A$ has an inverse matrix A^{-1} .

$$Aw = y$$

$$A^{-1} \cdot Aw = A^{-1} y$$

$$w = A^{-1} y$$