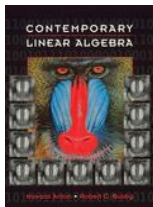


Chapter , Section of *Contemporary Linear Algebra* by Anton and Busby



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1. Let $\mathbf{a} = (3, 1, 1, 3)$. The standard matrix for $\text{proj}_{\mathbf{a}}$ is

▶ A $\frac{1}{20} \begin{bmatrix} 3 \\ 1 \\ 1 \\ 2 \end{bmatrix}$

▶ B $\frac{1}{20} \begin{bmatrix} 1 & 1 & 0 & 0 \\ -3 & 0 & 2 & 0 \\ 0 & -3 & 0 & 2 \\ 0 & 0 & -1 & -1 \end{bmatrix}$

▶ C $\frac{1}{20} [3 \ 1 \ 1 \ 2]$

▶ D $\frac{1}{20} \begin{bmatrix} 3 & 1 & 1 & 2 \\ 0 & 1 & 1 & 3 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 2 \end{bmatrix}$

▶ E $\frac{1}{20} \begin{bmatrix} 9 & 3 & 3 & 9 \\ 3 & 1 & 1 & 3 \\ 3 & 1 & 1 & 3 \\ 9 & 3 & 3 & 9 \end{bmatrix}$.

2. The closest point to $(9, 3, 6)$, that lies in the plane spanned by $(1, 0, 1)$ and $(0, 1, 1)$ is

- ▶ A $(0, 0, 0)$
- ▶ B $(7, 1, 8)$
- ▶ C $(3, 1, 2)$
- ▶ D $(9, 3, 0)$
- ▶ E $(9, 3, 6)$

Next Question

3. If A has full row rank then $A^T(AA^T)^{-1}A$ is

- ▶ A $\text{proj}_{\text{row}(A)}$
- ▶ B $\text{proj}_{\text{col}(A)}$
- ▶ C $\text{proj}_{\text{null}(A)}$
- ▶ D $\text{proj}_{\text{null}(A^T)}$
- ▶ E none of these.

Next Question

4. If

$$[\text{proj}_W] = \frac{1}{6} \begin{bmatrix} 5 & 2 & -1 \\ 2 & 2 & 2 \\ -1 & 2 & 5 \end{bmatrix}$$

then W is

- A $(5, 2, -1)^\perp$
- B $(1, 2, 1)^\perp$
- C $(2, 2, 2)^\perp$
- D $(-1, 2, 5)^\perp$
- E $(1, -2, 1)^\perp$.

Next Question

5. Suppose P is the standard matrix of a projection. Find the false statement.

▶ A $P(I - P) = 0$

▶ B $2PP^T = P + P^T$

▶ C $(I - P)^2 = I - P$

▶ D $P^T + (I - P)^T = P$

▶ E $(I + P)^2 = I + 3P$

No more questions



RIGHT!

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Wrong...try again

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