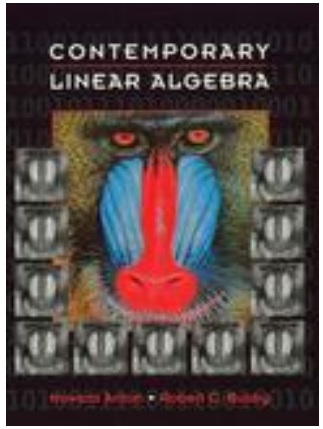
Chapter 7, Section 9 of *Contemporary Linear Algebra* by Anton and Busby



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1. Let $\mathbf{v} = (-1, 1, 2, 0, 4, 3)$ and $\mathbf{w} = (-2, 1, 1, 0, 1, 5)$. Find $\text{proj}_{\mathbf{w}}\mathbf{v}$.

- A $\frac{31}{32}\mathbf{w}$
- B $\frac{24}{31}\mathbf{w}$
- C $\frac{31}{24}\mathbf{w}$
- D $\frac{24}{32}\mathbf{w}$
- E $\frac{32}{24}\mathbf{w}$

Next Question

2.Suppose Gram-Schmidt orthogonolisation applied to

$$(-1, 2, 1), (2, -1, 1), (1, 1, -2)$$

produces $\mathbf{v}_1, \mathbf{v}_2, \mathbf{v}_3$. Then $\mathbf{v}_3$ is

- A $(1, 0, 1)$
- B $(\frac{4}{3}, \frac{4}{3}, -frac43)$
- C $(1, -1, 0)$
- D $((\frac{4}{3}, -\frac{4}{3}, frac43)$
- E $(2, 2, 0)$

Next Question

3. Express $\mathbf{x} = (-12, 1, 1, 6)$ in the form $\mathbf{x} = \mathbf{x}_1 + \mathbf{x}_2$ where $\mathbf{x}_1$ is in the hyperplane $(-1, 1, 1, 4)^{\perp}$ and $\mathbf{x}_2$ is in its orthogonal complement.

- A $\mathbf{x} = (12, -1, -1, -6) + (-24, 2, 2, 12)$
- B $\mathbf{x} = (-11, 0, 0, 2) + (-1, 1, 1, 4)$
- C $\mathbf{x} = (-10, -1, -1, -2) + (-2, 2, 2, 8)$
- D $\mathbf{x} = (-14, 3, 3, 14) + (2, -2, -2, -8)$
- E $\mathbf{x} = (12, -1, -1, 6) + (0, 0, 0, 0)$

Next Question

4. Find $\mathrm{proj}_W(1,0,0,0,0,0)$ where W is the span of

$$(3,-2,1,1,3,-1),(3,1,2,1,-3,1),(1,3,1,-3,1,-2).$$

- A $\frac{1}{25}(19,0,10,3,1,-2)$
- B $\frac{1}{25}(7,2,5,-1,1,-2)$
- C $\frac{1}{25}(-1,-3,-1,3,-1,2)$
- D $\frac{1}{25}(9,-2,2,1,-9,1)$
- E $\frac{1}{25}(4,-4,2,-1,-1,2)$.

Next Question

5. Let W be a subspace of R^n. Let B be an orthonormal basis of W, and the set C an orthonormal basis of $W^{\perp}$. Put $D = B \cup C$, so D is the set of all vectors in B and C. The D is

- A an orthonormal basis of R^n;
- B an orthogonal basis of R^n but not necessairly an orthonormal basis;
- C a basis of R^n but not necessarily an orthogonal basis;
- D a linearly independent subset of R^n but not necessairly a basis;
- E a subet of R^n nut not necessarily a linearly independent subset.

No more questions

RIGHT!

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Wrong...try again

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