Linear Algebra 4.2 Homework

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1. $(0, 0, 0, 0)$
3. $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$
5. 0 or $0 + 0x + 0x^2 + 0x^3$
7. $(a, b, c) + (-a, -b, -c) = (0, 0, 0)$
9. $\begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix} + \begin{bmatrix} -a & -b & -c \\ -d & -e & -f \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$
11. $a + bx + cx^2 + dx^3 + ex^4 + (-a - bx - cx^2 - dx^3 - ex^4) = 0$
13. $M_{4,6}$ meets all axioms, and, therefore, is a vector space
15. P_3 does not meet axiom one, and, therefore, is not a vector space. (For example, if $v_1 = 1 - x^3$ and $v_2 = 1 + x^2 + x^3$, then $v_1 + v_2 = 2 + x^2$, and is not in P_3)
21.
24.
26.
27.
34.
35.
36.
37.
40.
41. (a)
42. (d)