

1. (a) $y(x) = c_1e^x + c_2e^{-4x}$
(b) $y(x) = c_1e^{2x} + c_2xe^{2x}$
2. $y(x) = \frac{7}{4}e^{2x} + \frac{5}{4}e^{-2x} - 2$
3. (a) 63
(b) 79
4. 32
5. $(x_1, x_2, x_3) = (\frac{1}{3}, 1, -\frac{1}{3})$
6. $\left\{ \begin{pmatrix} 5 \\ -2 \\ 1 \\ 1 \end{pmatrix} \right\}$ (or any multiple of this vector)
7. Basis: $\left\{ \begin{pmatrix} 1 \\ 2 \end{pmatrix}, \begin{pmatrix} 2 \\ 5 \end{pmatrix} \right\}$ (or any two of the three given vectors, or any two independent vectors in \mathfrak{R}^2 , since the span of the three given vectors is all of \mathfrak{R}^2).
8. (a) $A^{-1} = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 0 \\ 0 & 0 & \frac{1}{3} \end{pmatrix}$
(b) Multiply row three by 3; replace row 2 with itself - 2 times row 1.
9. (a) True (b) False (c) False
10. Yes. Closed under both multiplication by scalars and addition of vectors.
11. On previous class handout
12. On previous class handout