1. Solve each system by substitution. Determine whether each system is independent, inconsistent or dependent.

(a) \[ y = 2x + 1 \]
\[ 1 = 3x - 4y \]
(b) \[ 2y = 1 - 4x \]
\[ 2x + y = 0 \]
(c) \[ \frac{2x + y}{2} = 300 \]
\[ \frac{1}{3}x + \frac{1}{3}y = 80 \]

2. Solve each system by substitution. Determine whether each system is independent, inconsistent or dependent.

(a) \[ x - y = 5 \]
\[ 3x + 2y = 10 \]
(b) \[ 5x - y = 6 \]
\[ 2y = 10x - 12 \]
(c) \[ -2x + 5y = 14 \]
\[ 7x + 6y = -2 \]

3. A rancher has some normal cows and horses. One day he observed that his animals have a total of 96 legs and 24 tails. How many animals of each type does he have?

4. Althea has a higher income than Eric and their total income is $82,000. If their salaries differ by $16,000, then what is the income of each?

5. At the Book Exchange, all paperbacks sell for one price and all hardbacks sell for another price. Tanya got six paperbacks and three hardbacks for $8.25, while Gretta got four paperbacks and five hardbacks for $9.25. What was Todd’s bill for seven paperbacks and nine hardbacks?

6. Determine the size of the following matrices.

(a) \[ \begin{bmatrix} 2 & 6 & 8 \end{bmatrix} \]
(b) \[ \begin{bmatrix} -1 & 23 \\ 2 & 0 \\ 97 & 1 \end{bmatrix} \]

7. Perform the indicated row operation on the given matrix: \[ R_2 \rightarrow 3R_1 + R_2 \]

8. Solve the following system of equations using Gaussian elimination. State whether each system is independent, dependent or inconsistent.

(a) \[ 2x + 2y = 8 \]
\[ -3x - y = -6 \]
(b) \[ 2x - 3y = -1 \]
\[ 3x - 2y = 1 \]
(c) \[ y = 4 - 2x \]
\[ x = 8 + y \]

9. Use a calculator to solve the following systems of equations. State if the system is independent, dependent, or inconsistent.

(a) \[ x + y + z = 6 \]
\[ x - y - z = 0 \]
\[ 2y - z = 3 \]
(b) \[ 3y = x + z \]
\[ x - y - 3z = 4 \]
\[ x + y + 2z = -1 \]