Solutions for

Solving 3 Unknown Linear System Equations by Algebra

Solving 3 unknown by Algebra

\[ 2r - 3s - 2t = -11 \quad \ldots \quad (1) \]
\[ 3r + 3s - t = -3 \quad \ldots \quad (2) \]
\[ 2r - s + 2t = 3 \quad \ldots \quad (3) \]

**Step 1, to eliminate "s":**
\[ (1) + (2): \quad 5r - 3t = -14 \quad \ldots \quad (4) \]

\[ (3) \times 3: \quad 6r - 3s + 6t = 9 \quad \ldots \quad (5) \]

\[ (5) + (2): \quad 9r + 5t = 6 \quad \ldots \quad \ldots \quad \ldots \quad (6) \]

**Step 2, to eliminate "t":**
\[ (4) \times 5: \quad 25r - 15t = -70 \quad \ldots \quad (7) \]

\[ (6) \times 3: \quad 27r + 15t = 18 \quad \ldots \quad (8) \]

\[ (7) + (8): \quad 52r = -52, \quad \therefore r = -1 \]

**Step 3, to substitute r = -1 to (6):**
\[ 9(-1) + 5t = 6, \quad \therefore t = 3, \]

*to substitute r = -1 and t = 3 to (3):*
\[ 2r - s + 2t = 3 \]
\[ 2(-1) - s + 2(3) = 3, \quad \therefore s = 1 \]

\[ \therefore Solution: r = -1, s = 1, \text{ and } t = 3. \]