

Secondary 3 Honors

Notes: Solving Systems of 3 Equations

Solve the following 3 equations:

- a) $3x + 2y + 4z = 11$
- b) $2x - y + 3z = 4$
- c) $5x - 3y + 5z = -1$

$(-3, 2, 4)$

a) $3x + 2y + 4z = 11$
 b) $(2x - y + 3z = 4)(2)$

$$\begin{array}{r} 3x + 2y + 4z = 11 \\ + 4x - 2y + 6z = 8 \\ \hline 7x \quad \quad + 10z = 19 \end{array}$$

b) $(2x - y + 3z = 4)(-3)$
 c) $5x - 3y + 5z = -1$

$$\begin{array}{r} -6x + 3y - 9z = -12 \\ + 5x - 3y + 5z = -1 \\ \hline -1x \quad \quad -4z = -13 \end{array}$$

$$\begin{array}{r} 7x + 10(4) = 19 \\ 7x + 40 = 19 \\ -40 \quad -40 \\ \hline 7x = -21 \\ \frac{7x}{7} = \frac{-21}{7} \\ \hline x = -3 \end{array}$$

$7x + 10z = 19$
 $(-x - 4z = -13)(7)$

$$\begin{array}{r} 7x + 10z = 19 \\ + -7x - 28z = -91 \\ \hline -18z = -72 \\ \frac{-18z}{-18} = \frac{-72}{-18} \\ \hline z = 4 \end{array}$$

$3(-3) + 2y + 4(4) = 11$
 $-9 + 2y + 16 = 11$
 $2y + 7 = 11$
 $2y = 4$
 $\frac{2y}{2} = \frac{4}{2}$
 $y = 2$

Solve the following 3 equations:

- a) $x + y + z = 2$
- b) $3x + 3y + 3z = 14$
- c) $x - 2y + z = 4$

$(x + y + z = 2)(-3)$
 $3x + 3y + 3z = 14$

$$\begin{array}{r} -3x - 3y - 3z = -6 \\ + 3x + 3y + 3z = 14 \\ \hline 0 \quad \quad \quad \neq 8 \end{array}$$

(Empty box for solving the second system)

NO SOLUTION

Solve

The University of Utah and Brigham Young University scored a total of 39 points during the 2015 Las Vegas Bowl. The points came from a total of 11 different scoring plays, which were a combination of touchdowns, extra-point kicks, and field goals, worth 6, 1, and 3 points respectively. The same numbers of touchdowns and field goals were scored. How many touchdowns, extra-point kicks, and field goals were scored during the game?

T, K, F

$$6T + 1K + 3F = 39$$

$$T = F$$

$$T + K + F = 11$$

$$T - F = 0$$

$$\begin{array}{r} 6T + 1K + 3F = 39 \\ (T + K + F = 11)(-6) \end{array}$$

$$\begin{array}{r} \cancel{6T} + 1K + 3F = 39 \\ + \cancel{-6T} - 6K - 6F = -66 \\ \hline -5K - 3F = -27 \end{array}$$

$$\begin{array}{r} T + K + F = 11 \\ (T + 0K - F = 0)(-1) \end{array}$$

$$\begin{array}{r} \cancel{T} + K + F = 11 \\ + \cancel{-T} + 0K + F = 0 \\ \hline K + 2F = 11 \end{array}$$

$$\begin{array}{r} 3 + 2F = 11 \\ -3 \quad -3 \\ \hline 2F = 8 \\ \frac{2F}{2} = \frac{8}{2} \end{array}$$

$$F = 4$$

$$T = 4$$

$$\begin{array}{r} (-5K - 3F = -27)(2) \\ (K + 2F = 11)(3) \end{array}$$

$$\begin{array}{r} -10K - 6F = -54 \\ + 3K + 6F = 33 \\ \hline -7K = -21 \\ \frac{-7K}{-7} = \frac{-21}{-7} \end{array}$$

$$K = 3$$

There were 4 TD's, 4 FG's, 3 kicks scored during the game.