Algebra II

SS 4

Solving Systems of Linear Equations in Three Variables

Equations in two variables define a line (1-dimension).

How many solutions are possible in the crossing of 2 lines? 3

List them: 1) one point

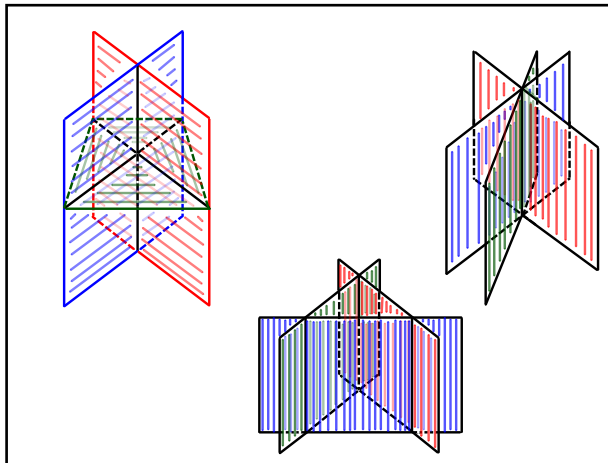
2) no points - parallel

3) infinite solutions — one over the other

Equations in three variables define a plane (2-dimensions).

How many solutions are possible in the crossing of 3 planes?

1) infinite solutions
2) one point 3) none



Solve each system. (pg 447)

1) $x + y - 3z = 10$
$y + z = 12$
$z = -2$

$y + (-2) = 12$
$y = 14$

$x + (14) - 3(-2) = 10$
$x + 20 = 10$
$x = -10$

$\{(-10, 14, -2)\}$

9) $2x + y + 3z = 10$
$x - 2y + z = 10$
$-4x + 3y + 2z = 5$

(-2)

$2x + y + 3z = 10$
$-2x + 4y - 2z = -20$
$5y + z = -10$

(4)

$4x + 2y + 6z = 20$
$-4x + 3y + 2z = 5$
$5y + 8z = 25$

$-5y - z = 10$
$5y + 8z = 25$
$7z = 35$
$z = 5$

$x - 2(-3) + (5) = 10$
$x + 11 = 10$
$x = -1$

$5y + (5) = -10$
$5y = -15$
$y = -3$

$\{(-1, -3, 5)\}$

pg 447
1-12 all