The graph of an equation with two variables.

A line on the x-y plane.

What does a system two linear equations look like?

Two lines on the same graph.

The solution to a system of linear equations is

the point where the lines intersect.

A system of linear equations (2 variables) can have how many solutions?

$y = 3x - 4$

$2x + 6y = 21$

One Solution: Lines intersect at ONE point

No Solution: Lines are parallel

Many Solutions: Equations are the same line

The graph of an equation with three variables

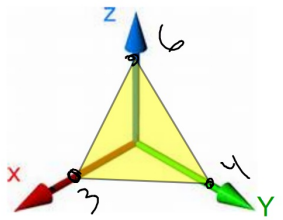
$12x + 9y + 6z = 36$

A plane in space

x-int = 3

y-int = 4

z-int = 6



What does a system of equations in three variables look like?

Planes in space.

A system of equations in three variables requires THREE EQUATIONS.

A system of equations in three variables can have how many solutions?

$2x + 3y + 4z = -1$

$6x - 7y + z = 34$

$-4x + 5y - z = -24$

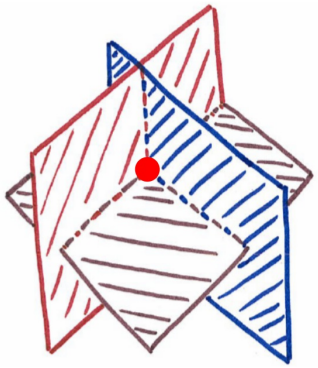
# of solutions possible:

One Solution

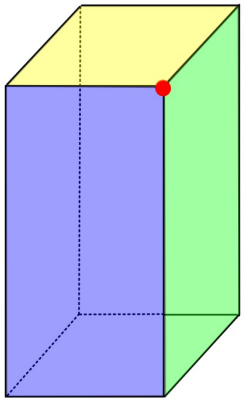
No Solution

Many Solutions

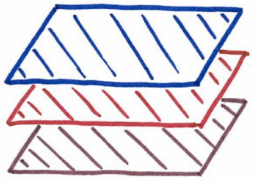
One Solution:



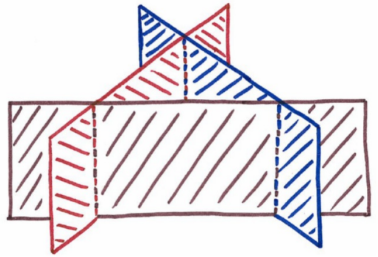
OR



No Solution:



3 parallel planes



All 3 planes don't intersect at the same spot.

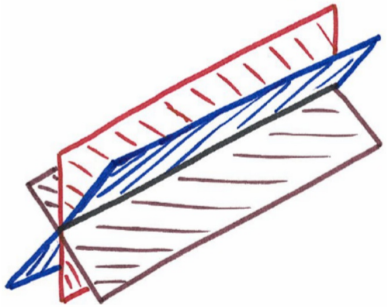
Many Solutions:

They are all the same plane

or

The 3 planes intersect to form a line:

There are an infinite # of points on a line.



How would you solve this system of equations in three variables:

$x + 3y + 7z = 43$

$4x - 3y + z = 19$

$x + 5y - 2z = 13$

Use matrices!

$[A]^{-1}[B]$

A 3x3

$\begin{bmatrix} 1 & 3 & 7 \\ 4 & -3 & 1 \\ 1 & 5 & -2 \end{bmatrix}$

B 3x1

$\begin{bmatrix} 43 \\ 19 \\ 13 \end{bmatrix}$

Sol (6, 3, 4)

ordered triple

Solve this system of equations. Give your answer as an ordered triple.

$2x - y + 3z = 21.5$

$3x - 4z = -22$

$7y + 2z = 38.5$

$[A]^{-1}[B] = (2, 3.5, 7)$

A

$\begin{bmatrix} 2 & -1 & 3 \\ 3 & 0 & -4 \\ 0 & 7 & 2 \end{bmatrix}$

B

$\begin{bmatrix} 21.5 \\ -22 \\ 38.5 \end{bmatrix}$

You can now finish Hwk #14 Sec 3-6

Page 158 Problems 26, 27, 30, 31
AND
Page 218 Problem 30

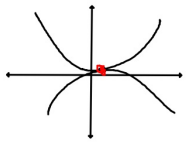
Write out Matrices A and B then give the solution as an ordered triple.

What does a system of quadratic equations look like?

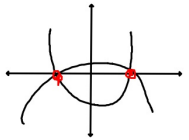
Two parabolas on the same x-y plane.

Possible solutions to a system of quadratic equations.

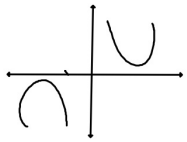
One Solution:



Two Solutions:



No Solution:



Many Solutions:

They are the same parabola