17, 13

(13) $4x - y + 2z = 5$

$2y + z = 4$

$4x + y + 3z = 10$

$-E1 + E3$

$-E1 \quad -4x + y - 2z = -5$

$E2 \quad 4x + y + 3z = 10$

$-E1+E2 \quad 2y + z = 5$

E1 $4x - y + 2z = 5$

E2 $2y + z = 5$

E3 $2y + z = 4$

Solve the 2x2!

$-E2 + E3$

$-E2 \quad -2y - z = -5$

$E3 \quad 2y + z = 4$

$-E2+E3: \quad 0 = -1$ FALSE !? No soln

Soln Set: $\varnothing$

Oct 1-11:09 AM

(17) $(x,y,z) \in \{(-3,-35,-7)\}$

(25)
E1 $-2x-4y+6z=-8$ $\quad E1 = -2\,E2$
E2 $x+2y-3z=4$ $\quad E3 = 4\,E2$
E3 $4x+8y-12z=16$ Equivalent Equations.

$x+2y-3z=4$ holds ALL the info.

NEW SYSTEM:

$x+2y-3z=4$
$0=0$
$0=0$

$(x,y,z) \in \{(x,y,z) \mid x+2y-3z=4\}$

The pro's do it this way:

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

$(x,y,z) \in \{(-2y+3z+4, y, z) \mid y,z \in \mathbb{R}\}$

y & z are free!

Oct 1-11:15 AM

(32) Clear Fracs, man.

E1 $\frac{1}{3}x - \frac{1}{4}y + z = -9$ LCD = 12

E2 $\frac{1}{2}x - \frac{1}{3}y - \frac{1}{4}z = -6$ LCD = 12

E3 $x - \frac{1}{2}y - z = -8$ LCD = 2

12E1 $\frac{4}{12}(\frac{1}{3}x) - \frac{3}{12}(\frac{1}{4}y) + 12z = 12(-9)$

$4x - 3y + 12z = -108$

12E2 $6x - 4y - 3z = -72$

2E3 $2x - y - 2z = -16$

Nicholas

Andrew

E1 $2x - y - 2z = -16$

E2 $4x - 3y + 12z = -108$

E3 $6x - 4y - 3z = -72$

-2E1 + E2:

-2E1 $-4x + 2y + 4z = 32$

E2 $4x - 3y + 12z = -108$

$-y + 16z = -76$

-3E1 + E3:

-3E1 $-6x + 3y + 6z = 48$

E3 $6x - 4y - 3z = -72$

$-y + 3z = -24$

New System

E1 $2x - y - 2z = -16$

E2 $-y + 16z = -76$

E3 $-y + 3z = -24$

$-E2 + E3$:

$y - 16z = 76$

$-y + 3z = -24$

$-13z = 52$

$z = -\frac{52}{13} = -4$

$z = -4$

New System :

$2x - y - 2z = -16$

$-y + 16z = -76$

$z = -4$

$-y + 16z = -y + 16(-4) = -76$

$-y - 64 = -76$

$-y = -12$

$y = 12$

$2x - y - 2z = 2x - 12 - 2(-4) = -16$

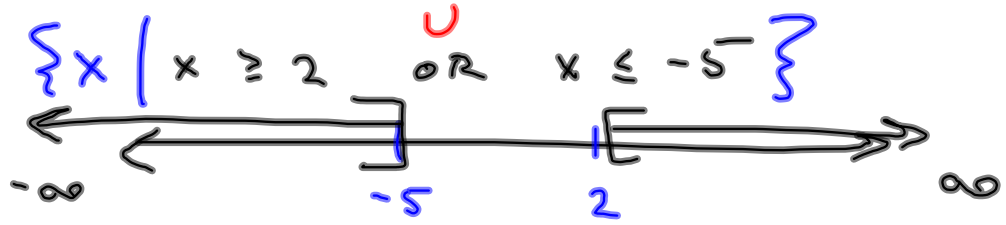
$2x - 12 + 8 = -16$

$2x = -12$

$x = -6$

$(x, y, z) \in \{(-6, 12, -4)\}$

$\{x \mid x \geq 2 \cup \text{OR} \; x \leq -5\}$



$(-\infty, -5] \cup [2, \infty)$

$\{x \mid x \geq 2 \text{ AND } x \leq -5\}$

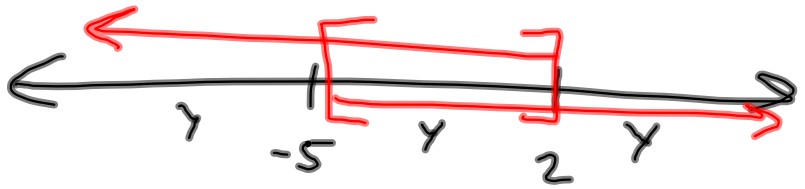
$(-\infty, -5] \cap [2, \infty) = \varnothing$

look for overlap.

There isn't any.

Oct 1-11:48 AM

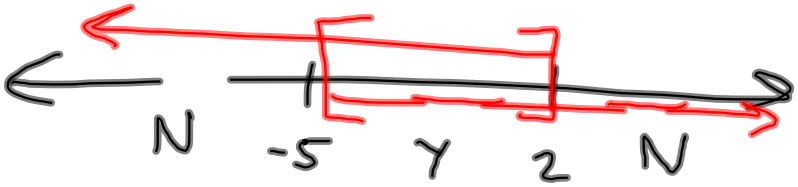
$\{x \mid x \le 2 \text{ OR } x \ge -5\}$



$(-\infty, 2] \cup [-5, \infty) = (-\infty, \infty)$

$\{x \mid x \le 2 \text{ AND } x \ge -5\}$

$(-\infty, 2] \cap [-5, \infty) = [-5, 2]$

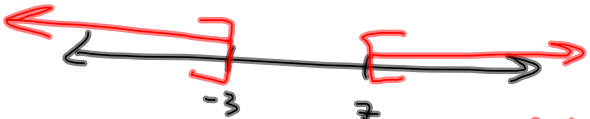


$|x-2| \le -5$

Never!

$x-2 \le -5$ AND $x-2 \ge 5$

$x \le -3$ AND $x \ge 7$



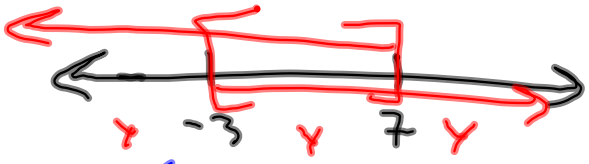
No overlap. No Solution

$|x-2| \ge -5$

Always

$x-2 \ge -5$ OR $x-2 \le 5$

$x \ge -3$ OR $x \le 7$



$(-\infty, \infty)$