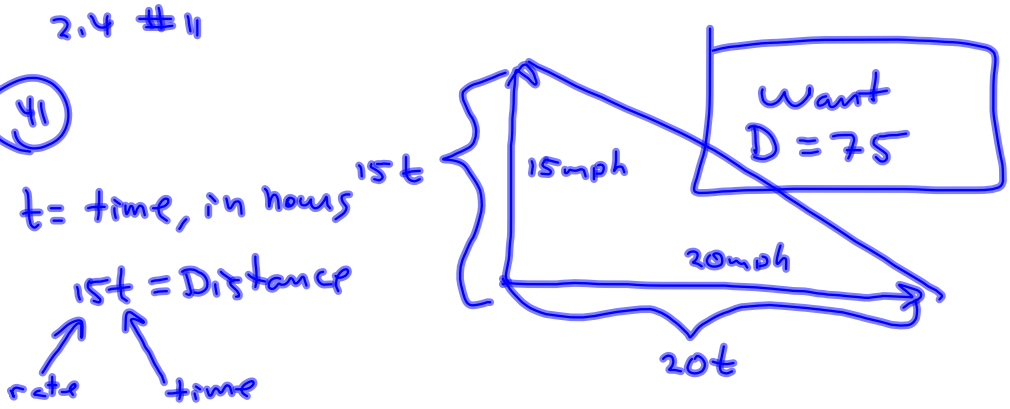
2.3 #41, 49, ~~51~~

2.4 #11

$3\overline{)75}$
$5\overline{)25}$
5

(41)



t = time, in hours

15t = Distance

rate · time

$(15t)^2 + (20t)^2 = 75^2$

$225t^2 + 400t^2 = 5625$

$625t^2 = 5625$

$t^2 = \frac{5625}{625} = \frac{3\cdot5\cdot5\cdot3\cdot5\cdot5}{5\cdot5\cdot5\cdot5} = 9$

$\sqrt{(-3)^2} = \sqrt{9} = 3$

$\sqrt{3^2} = \sqrt{9} = 3$

$t^2 = 9$

$\sqrt{t^2} = \sqrt{9}$

$|t| = 3$

$t = \pm 3$

Throw out $t = -3$

$3\overline{)375}$
75
375
5250
5625

M1

$t^2 - 9 = 0$

$(t-3)(t+3) = 0$

$t-3=0$ OR $t+3=0$

$t=3$ OR $t=-3$

$t \in \{\pm 3\}$

Problem says $t=+3$ is only one that makes sense.

http://www.mathtv.com/videos_by_textbook?id=4#

Videos!

Pg 92 for bumpin' smart phone thingie Videos!

49) starts with $250 Tax rate is 6%
Ends with $1204

Brought in $954 with tax (after tax)

x = original amt w/o tax

price + tax = price + tax

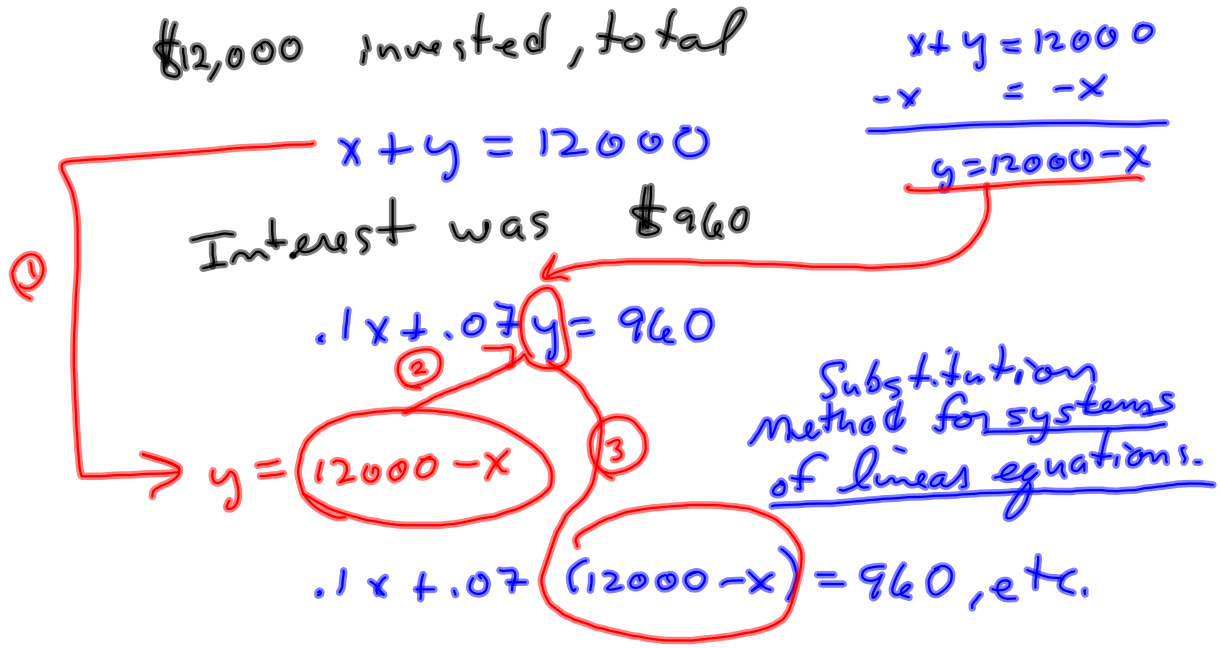
$x + .06x = 954$

$12,000 invested, total

Let x = amt invested @ 10% per year ($)

y = " " " 7% " " ($)

Interest was $960



$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

$$|-3| = -(-3) = +3$$

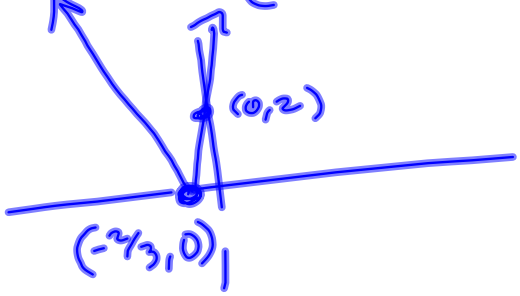
$y = 3x+2$

$$|3x+2| = \begin{cases} 3x+2 & \text{if } 3x+2 \geq 0 \\ -(3x+2) & \text{if } 3x+2 < 0 \end{cases}$$

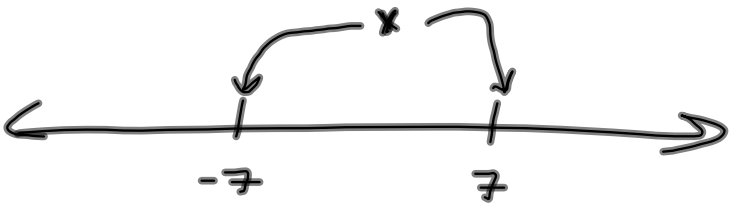
$3x+2=0$

$3x=-2$

$x=-\frac{2}{3}$



$|x| = 7$



$|x| = 7$ means

$x = +7$ OR $x = -7$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

comes from an absolute value like this one

$x^2 = 49$

$\sqrt{x^2} = \sqrt{49}$

$|x| = 7$

$x = +7$ OR $x = -7$

$x = \pm 7$

$|3x-7| = -5$ Nevah!

$3x-7 = -5$ OR $3x-7 = +5$

$|3x-7| = 5$

$3x-7 = \pm 5$

$3x-7=5$ OR $3x-7=-5$

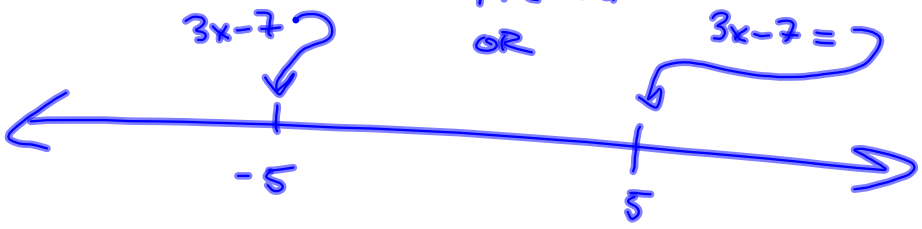
$3x = 12$ $\quad 3x = 2$

$\{x \mid x = \frac{12}{3} = 4$ OR $x = \frac{2}{3}\}$

$x \in \{\frac{2}{3}, 4\}$

Picture

OR



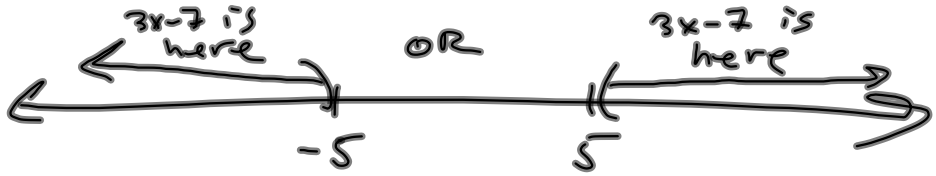
$|3x-7| < 5$

$-5 < 3x-7 < 5$

Conjunction

$3x-7 < 5$ AND $3x-7 > -5$

$|3x-7| > 5$



$|3x-7| < -5$ Nuvah! $\varnothing$

$|3x-7| > -5$ Always $(-\infty, \infty)$

$= \{x \mid x \text{ is real}\}$

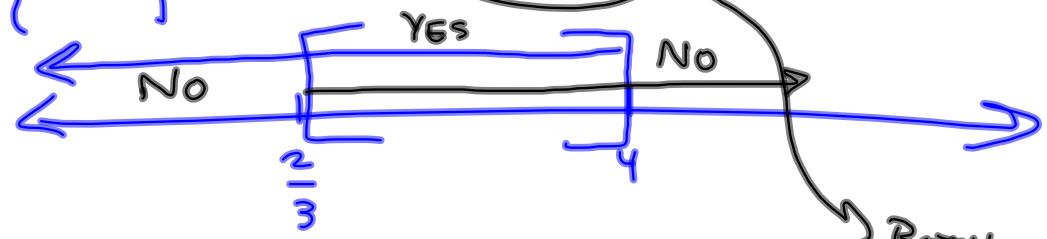
$= \mathbb{R}$

$|3x-7| \leq 5$

$3x-7 \leq 5$ AND $3x-7 \geq -5$

$3x \leq 12$ $\quad$ $3x \geq 2$

$\{x \mid x \leq 4$ AND $x \geq \frac{2}{3}\}$



$[\frac{2}{3}, 4]$

$|3x-7| < -5$

$3x-7 < -5$ and $3x-7 > 5$

$3x < 2$ $\quad$ $3x > 12$

$\{x \mid x < \frac{2}{3}$ and $x > 4\}$

No crossover/overlap

i.e., No intersection "and"

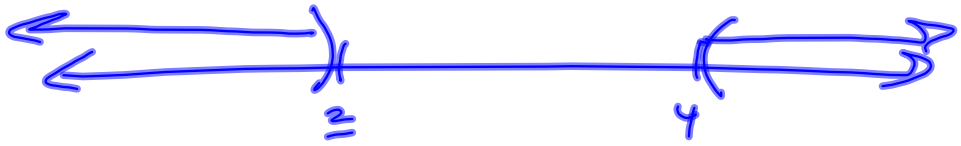
$\emptyset$

$|3x-7| > 5$

$3x-7 > 5$ OR $3x-7 < -5$

$3x > 12$ $3x < 2$

$\{x \mid x > 4$ OR $x < \frac{2}{3}\}$



$(-\infty, \frac{2}{3}) \cup (4, \infty)$

$|A| < B$ AND

$|A| > B$ OR

§2.5 #s 1–65

§2.6 #s 1–63

Answers in interval notation and set-builder notation

Set-build $\{x \mid x > -\frac{2}{3} \text{ AND } x < 5\}$

$= (-\frac{2}{3}, 5)$ Interval

use # line if it helps.

$|A| < B$ AND

$A < B$ and $A > -B$

$|A| > B$ OR

$A > B$ OR $A < -B$

$|A| = B$

$A = B$ OR $A = -B$

$$|3x-7| + 11 = 13$$
$$-11 = -11$$
$$|3x-7| = 2$$

$|a-4| = \frac{5}{3}$ LCD = 3

$a-4 = \frac{5}{3}$ OR $a-4 = -\frac{5}{3}$

etc.

$\frac{3a-12}{3} = \frac{5}{3}$

$3a-12 = 5$

$3a = 17$

$a = \frac{17}{3}$

$|a-4| = \frac{5}{3}$ LCD = 3

$\frac{3|a-4|}{3} = \frac{5}{3}$

$|3a-12| = 5$

etc.

$$2|b+c| = |2b+2c|$$

$$|3x^{-2}-7| = 5$$

$$\left|\frac{3}{x^2}-7\right| = 5$$

$$\left|\frac{3-7x^2}{x^2}\right| = 5$$

Nicole's evil question

Not for worries.

$$\frac{3-7x^2}{x^2} = 5 \quad \text{OR} \quad \frac{3-7x^2}{x^2} = -5$$