Binomial Squared $(a+b)^2 = a^2+2ab+b^2$

$(a+b)^3 = 1a^3+3a^2b+3ab^2+1b^3$

1 2 1

1 1 1
1 2 1
1 3 3 1
1 4 6 4 1

~~$(a+b)^2 = a^2+b^2$~~ Nemp.

$(3x-2)^2 = (3x)^2 + 2(3x)(-2) + (-2)^2$

$= 9x^2 - 12x + 4$

WRITE MUCH
THINK LITTLE

$(5x+7)^2 = 25x^2 + 70x + 49$

$2(5x)(7)$

Test Chapter 1 next Wednesday.

Writing Project #1 - 10% bonus by Friday

Solutions out on Monday

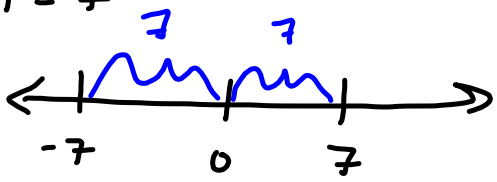
Due on Wednesday

S 1.6 Other Types of Equations (Eq'ns quadratic in form, anyone?)

S 1.7 Absolute-Value Equations and Inequalities

$|x|$ = Distance from x to 0 = $|x-0|$

$|x| = 7$



$x = 7$ or $x = -7$

$x \in \{-7, 7\}$.

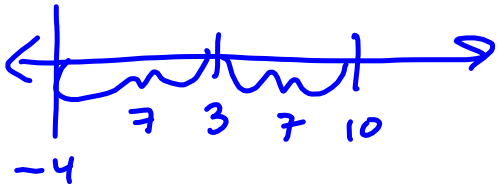
x is an element of $\{-7, 7\}$ $= \{7, -7\}$

$x = \pm 7$

$(-7, 7)$ ain't what you think

$(-7, 7) \neq (7, -7)$

$|x - 3| = 7$



$x - 3 = 7$ or $x - 3 = -7$

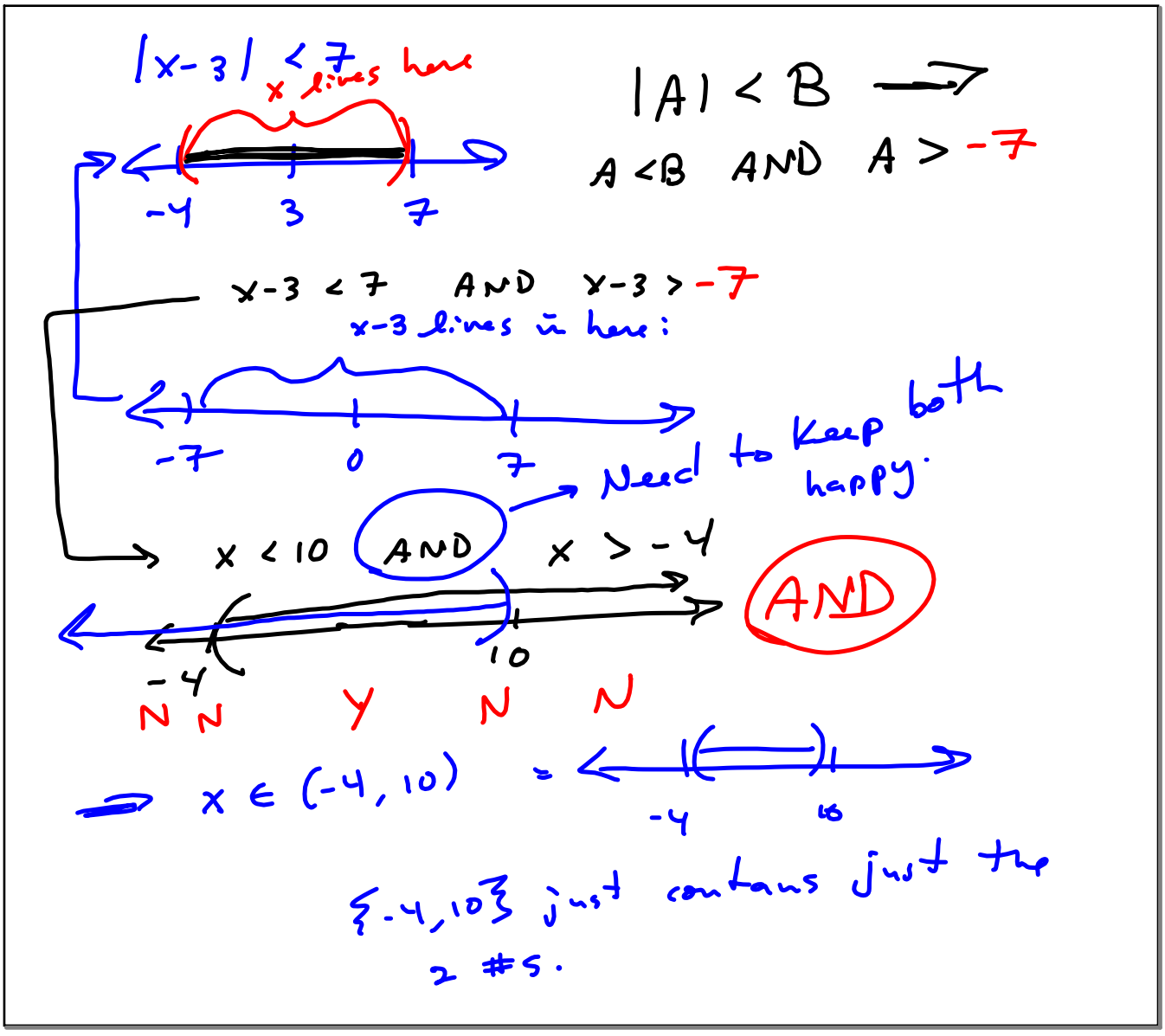
$x = 10$ $x = -4$

$\rightarrow x \in \{-4, 10\}$

I'm showing highlights. You can show more, but don't obscure the highlights with your manipulations.

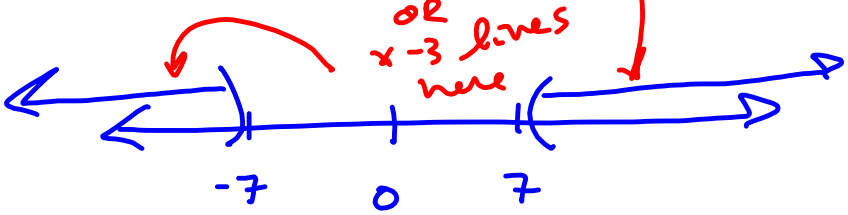
$x - 3 = \pm 7$

$x = 3 \pm 7$ → 10, -4


|x-3| < 7
x lives here
-4
3
7
|A| < B
A < B AND A > -7
x-3 < 7 AND x-3 > -7
x-3 lives in here:
-7
0
7
Need to keep both happy.
x < 10 AND x > -4
AND
-4
10
N N Y N N
x ∈ (-4, 10)
-4
10
{-4, 10} just contains just the 2 #s.

$|x-3| > 7$

$x-3$ lives here OR $x-3$ lives here

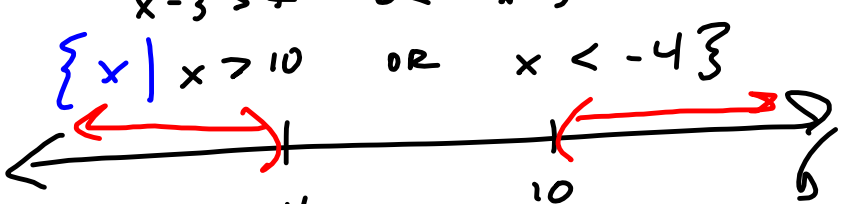


$|A| > B$

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

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

$\{x \mid x > 10$ OR $x < -4\}$



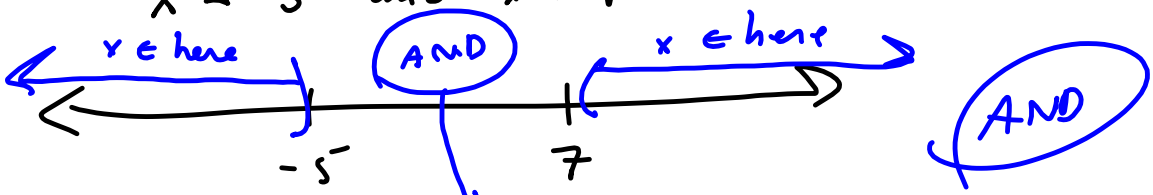
Y N N N Y

Need to keep at least one of 'em happy

$= (-\infty, -4) \cup (10, \infty)$

Union, "OR"

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



$= \varnothing$

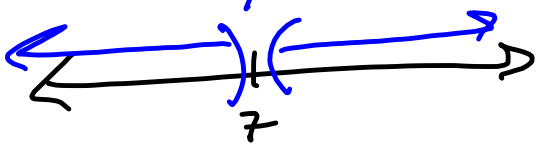
$\cap$

$\{x \mid x$ is man and woman$\}$

$\{x \mid x$ is man or woman$\}$

Everybody

$\{x \mid x \neq 7\} =$

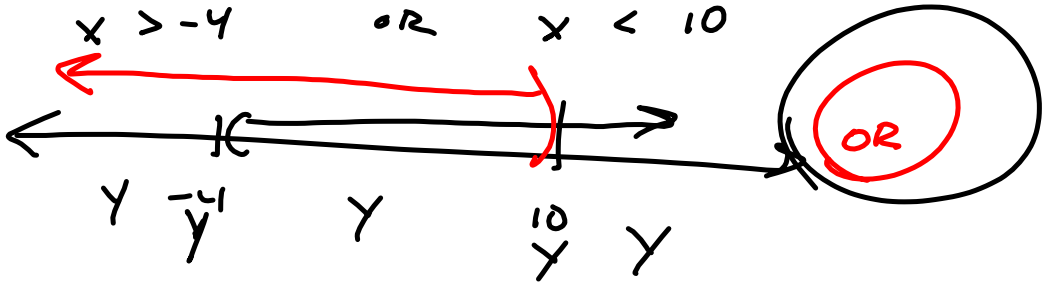


$= (-\infty, 7) \cup (7, \infty)$

$|x-3| > -7$ → Always!

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

$x > -4$ OR $x < 10$



-4 10

$= (-\infty, \infty)$

$\mathbb{R}$

$|x-3| < -7$ → Nevah!

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

$x < -4$ AND $x > 10$

N N N N N

$= \emptyset$

S 1.5 # 85

$12x^2 + \sqrt{6}x - 1 = 0$

$a = 12,\ b = \sqrt{6},\ c = -1$

$b^2 - 4ac = (\sqrt{6})^2 - 4(12)(-1)$

$= 6 + 48$

$= 54$

$\sqrt{54} = \sqrt{3 \cdot 3 \cdot 3 \cdot 2} = 3\sqrt{6}$

2 | 54
3 | 27
3 | 9
3

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

$= \dfrac{-\sqrt{6} \pm 3\sqrt{6}}{2(12)} =$

$\dfrac{\sqrt{6} + 3\sqrt{6}}{24} = \dfrac{2\sqrt{6}}{24} = \dfrac{\sqrt{6}}{12}$

$\dfrac{-\sqrt{6} - 3\sqrt{6}}{24} = \dfrac{-4\sqrt{6}}{24} = \dfrac{-\sqrt{6}}{6}$

$x \in \left\{ \dfrac{\sqrt{6}}{12}, -\dfrac{\sqrt{6}}{6} \right\}$

#93 $\dfrac{x-12}{x-3} = \dfrac{x+6}{x+7}$ → M.s-copy. Should be x+4

LCD = (x-3)(x+7)

$\left(\dfrac{x-12}{x-3}\right)\left(\dfrac{x+7}{x+7}\right) = \left(\dfrac{x+6}{x+7}\right)\left(\dfrac{x-3}{x-3}\right)$

$\dfrac{x^2 - 5x - 84}{LCD} = \dfrac{x^2 + 3x - 18}{LCD}$

$x^2 - 5x - 84 = x^2 + 3x - 18$

$-5x - 84 = 3x - 18$

$-8x = 66$

$x = \dfrac{66}{-8} = -\dfrac{33}{4} = x$

7
84
− 18
66