Math 95 ~ Wed, 4/15

Math Jokes

Q's on 8.3 - square root + factoring method

Checkpoint #3 (3.4, 3.5, 8.3)

New material: 8.4

1st Boss on Monday

All recovery work due

Scavenger hunt due

Chap 2, 3, 8.3, 8.4 + supplement

Calculator – graphing

Start at 9:00

Sun noon-5 Tutoring Center Study group

Q's on 8.3

~~43~~.

25. $ax^2+bx+c=a$

(y_1 = left side, y_2 = right side)

27.

X	y_1	y_2
-3	6	0
-2	0	0
-1	-4	0
0	-6	0
1	-6	0
2	-4	0
3	0	0

$\{-2, 3\}$

3.5

51. $\sqrt{x^2} = \pm 144$

$x = \pm 12$

$(12)^2 = 144$

$(-12)^2 = 144$

$\sqrt{(-12)^2}$

$\sqrt{144} = 12$

$\sqrt{-x^2}$

$(-x)^2$

$\sqrt{-x^2}$

$\{x \mid x=0\}$

$|x| = b$

$x = b$ or $x = -b$

$|x| = -3$

no solution

53. $5x^2 - 64 = 0$

$+64 \quad +64$

$5x^2 = 64$

$$\frac{\sqrt{}}{5} \qquad \frac{\sqrt{}}{5}$$

$$\sqrt{x^2} = \sqrt{\frac{64}{5}}$$

$$x = \pm\sqrt{\frac{64}{5}}$$

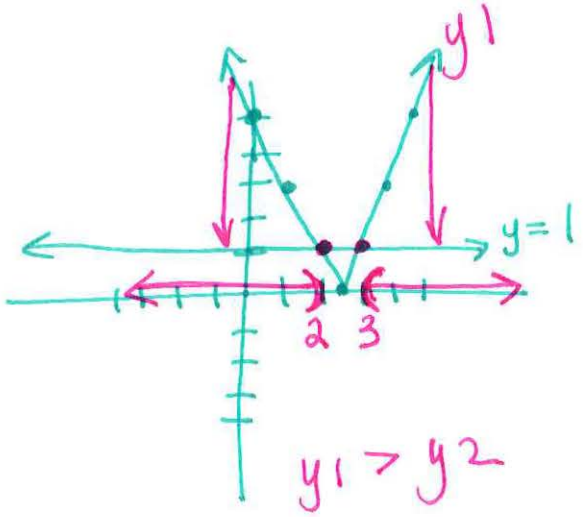
$$= \pm\frac{\sqrt{64}\,\sqrt{5}}{\sqrt{5}\,\sqrt{5}}$$

$$= \pm\frac{8\sqrt{5}}{\sqrt{25}}$$

$$= \pm\frac{8\sqrt{5}}{5}$$

Section 3.5

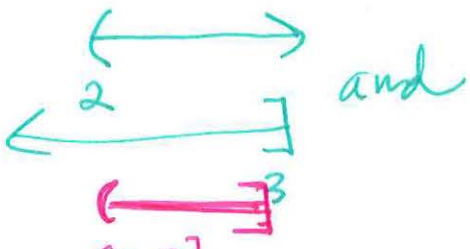
101. $\underbrace{|2x-5|}_{y_1} > \underbrace{1}_{y_2}$



$y_1 > y_2$

$(-\infty, 2) \cup (3, \infty)$

$\{x \mid x < 2 \text{ or } x > 3\}$



and

$(2, 3]$

$\{x \mid 2 < x \leq 3\}$

8.3 63. $x^2+4x=-3$

$x^2+4x+\underline{(2)^2} = -3+\underline{2^2}$

$\left(\frac{b}{2}\right)^2$ or $\left(\frac{1}{2}b\right)^2$

$(x+2)^2 = -3+4$

$\sqrt{(x+2)^2} = \pm\sqrt{1}$

$x+2 = \pm 1$

$-2 \quad -2$

$x = -2 \pm 1$

$-2+1=-1$ or $-2-1=-3$

$\{-3,-1\}$

Section 8.4 – The Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} \qquad ax^2+bx+c=0$$

18. $-x^2+2x+1=0$

$a=-1 \quad b=2 \quad c=1$

$$x = \frac{-2 \pm \sqrt{2^2-4(-1)(1)}}{2(-1)}$$

$$= \frac{-2 \pm \sqrt{4+4}}{-2}$$

$$= \frac{-2 \pm \sqrt{8}}{-2}$$

$$= \frac{-2 \pm \sqrt{4}\sqrt{2}}{-2}$$

$$= \frac{-2 \pm 2\sqrt{2}}{-2}$$

$$= \frac{+1 \pm \sqrt{2}}{-1}$$

$$= 1 \pm \sqrt{2}$$

$$\frac{-2 \pm 2\sqrt{2}}{-2}$$

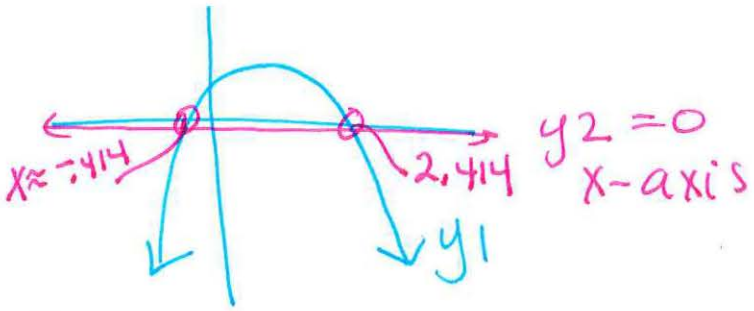
$$= \{1 \pm \sqrt{2}\}$$

$$\frac{4 \pm 6\sqrt{2}}{2} \qquad \frac{2 \pm 3\sqrt{2}}{2}$$

$$\{2 \pm 3\sqrt{2}\} \qquad \left\{\frac{2 \pm 3\sqrt{2}}{2}\right\}$$

Check with the graphing calculator

$$\underbrace{-x^2+2x+1}_{y_1} = \underbrace{0}_{y_2}$$



The solutions are the x-intercepts

Check → intersection
y1
y2

Symbolically

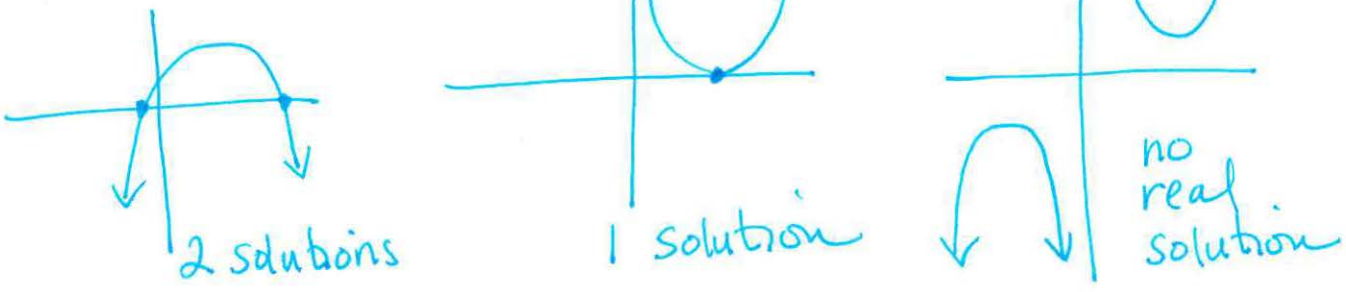
$\{1 \pm \sqrt{2}\}$

$1+\sqrt{2} \approx 2,414$

$1-\sqrt{2} \approx -.414$

→ zero (x-intercepts)
just use y1 and find the intercepts

How many solutions?



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

$D = b^2 - 4ac$

- → positive → 2 solutions
- → negative → no real solution
- → zero → 1 solution

$-\frac{b}{2a}$ (vertex)

if D is a perfect square then the equation factors.

Complex Solutions

$\sqrt{-1} = i$ imaginary number

$$\sqrt{-4} = \sqrt{4} \cdot \sqrt{-1}$$
$$= 2i$$

$$\sqrt{-11} = \sqrt{11}\sqrt{-1}$$
$$= \sqrt{11} \cdot i$$
$$= i\sqrt{11}$$

$$x = \frac{-2 \pm \sqrt{-40}}{3}$$ simplify

$$= \frac{-2 \pm \sqrt{40}\sqrt{-1}}{3}$$

$$= \frac{-2 \pm \sqrt{4}\sqrt{10}\sqrt{-1}}{3}$$

$$= \frac{-2 \pm 2i\sqrt{10}}{3}$$

$$\left\{ \frac{-2 \pm 2i\sqrt{10}}{3} \right\}$$

or

$$\left\{ -\frac{2}{3} \pm \frac{2}{3}i\sqrt{10} \right\}$$