

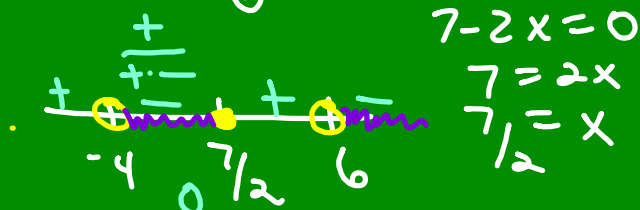
# SEMESTER REVIEW Day 2

$$\begin{array}{r} 1 - 4x < 13 \\ -1 \quad -1 \\ \hline -4x < 12 \\ -4 \quad -4 \\ \hline x > -3 \end{array}$$

14(b)

$$\frac{7-2x}{(x+4)(x-6)} \leq 0$$

Testing Points!!!



1) Find where each quantity = 0

2) Determine open/closed circle

3) Test a point & alternate +/-

4) Shade answers & write solution based on  $< 0$  OR  $> 0$

$$-4 < x \leq \frac{7}{2} \text{ OR } x > 6$$

14 c-d

$$\frac{1-5}{-1} |x+3| > \frac{-19}{-1}$$

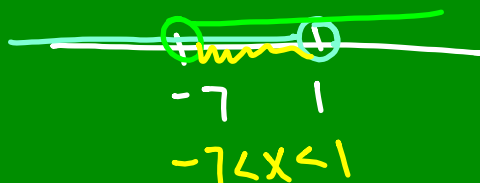
$$\frac{-5}{-5} |x+3| > \frac{-20}{-5}$$

$$|x+3| < 4$$

switch both

$$\begin{matrix} x+3 < 4 \\ -3 & -3 \end{matrix} \quad \text{AND} \quad \begin{matrix} x+3 > -4 \\ -3 & -3 \end{matrix}$$

$$x < 1 \quad \text{AND} \quad x > -7$$



Solve for x.

1) Isolate the abs value

2) Write + solve 2 equations

3) Graph + identify solution

Greater OR ← everything shaded

Less than AND → must intersect

# SQUARE ROOTS

$$\underline{2\sqrt{3}} + 3\sqrt{2} + \underline{5\sqrt{3}}$$

$$= 7\sqrt{3} + 3\sqrt{2}$$

$$\frac{5}{2\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{5\sqrt{6}}{12}$$

$$\sqrt{\frac{63}{9 \cdot 7}} - \sqrt{\frac{28}{4 \cdot 7}}$$

$$3\sqrt{7} - 2\sqrt{7} = \boxed{1\sqrt{7}}$$

$$\frac{2+3\sqrt{5}}{4-4\sqrt{5}} \cdot \frac{(4+4\sqrt{5})}{(4+4\sqrt{5})} \text{ FOIL FL}$$

Conjugate

$$= \frac{8 + 8\sqrt{5} + 12\sqrt{5} + \frac{60}{12 \cdot 5}}{16 - \frac{16 \cdot 5}{80}}$$

$$= \frac{-68 + 20\sqrt{5} + 64}{16}$$

$$= \boxed{\frac{-17 - 5\sqrt{5}}{16}}$$

## Complex Numbers

$$0.25 \quad i = i$$

$$\frac{3}{4} = 0.75 \quad i^2 = -1$$

$$0.75 \quad i^3 = -i$$

$$0.00 \quad i^4 = 1$$

$$6i^{50} + 8i^{27} - i^{64}$$

$$\frac{50}{4} = 12.5 \quad \frac{27}{4} = 6.75 \quad \frac{64}{4} = 16$$

$$6(-1) + 8(-i) - 1$$

$$-6 - 8i - 1$$

$$= \boxed{-7 - 8i}$$

$$\frac{5-2i}{4-3i} \cdot \frac{(4+3i)}{(4+3i)} \quad \begin{matrix} \text{FOIL} \\ \text{PL} \end{matrix}$$

conjugate

$$\frac{\quad + 6i^2}{\quad}$$

# QUADRATICS

Solve

$$5x^2 - 7x = 6$$

$$5x^2 - 7x - 6 = 0$$

$$(5x+3)(x-2) = 0$$

$$\begin{array}{c} \text{+3x} \\ \text{-10x} \end{array}$$

$$5x+3=0 \quad x-2=0$$

$$5x = -3$$

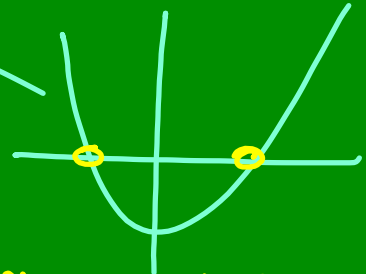
$$x = -3/5 \quad x = 2$$

1) Factor

2) Quadratic formula

~~3) Completing sq~~

4) Graphing on calculator



Menu - 6 Analyze  
- 1 Zero

## Quadratic Formula

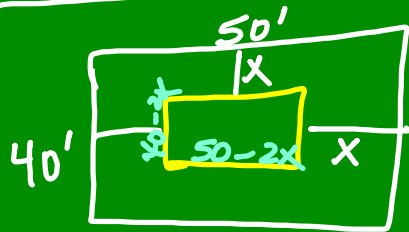
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-2 \pm \sqrt{-24}}{6}$$

$$= \frac{-2 \pm 2i\sqrt{6}}{6}$$

$$= \frac{-1 \pm i\sqrt{6}}{3}$$

## Word Problems



$$40 \cdot 50 = 2000 \text{ ft}^2$$

$$\sqrt{\frac{1}{2}}$$

$$(50 - 2x)(40 - 2x) = 1000$$

1) FOIL

2) Set = 0

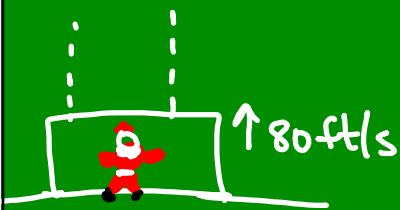
3) Solve by factoring  
or quadratic formula

# PROJECTILE MOTION

$$h(t) = \frac{1}{2}at^2 + V_0t + S_0$$

$$a = -32 \text{ ft/s}^2$$

$$a = -9.8 \text{ m/s}^2$$

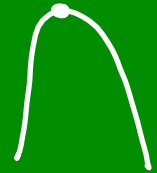


What is his maximum height?

$$h(t) = \frac{1}{2}(-32)t^2 + 80t + 0$$

$$h(t) = -16t^2 + 80t$$

$$t = \frac{-80}{2(-16)} = 2.5$$



Vertex:

$$x = \frac{-b}{2a}$$

$$y = \text{sub in } x$$

$$\begin{aligned} h(t) &= -16(2.5)^2 + 80(2.5) \\ &= 100 \text{ ft.} \end{aligned}$$

How many seconds to reach 60 ft.?

Solve  
for t.

$$60 = -16t^2 + 80t$$

$$16t^2 - 80t + 60 = 0$$

quadr. formula