Review Unit 1 - Quadratics

PART #1

Sequences
- Linear
- Levels of Difference
- Quadratic Sequences

Quadratics
- Graphing
- General Form
- Standard Form
- Transformational Form
- Mapping Notation
- Vertex (Completing the square)

Max/Min

Max/Min Applications
- Axis of Symmetry
- Range

not on this test

PART #2

Solving Quadratic Equations by: Factoring, Completing the Square, Quadratic Formula

Applied Word Problems

Nature of the Roots -Discriminant

Test Thurs

Test Topics:

→ Properties of Quadratics
a, h, k A.O.S range sketch max/min

→ Vertex ↔ Standard Form

→ Creating Quad. Equations knowing a point and a vertex using $y=a(x-h)^2+k$

→ Max/Min Applications (word problems)

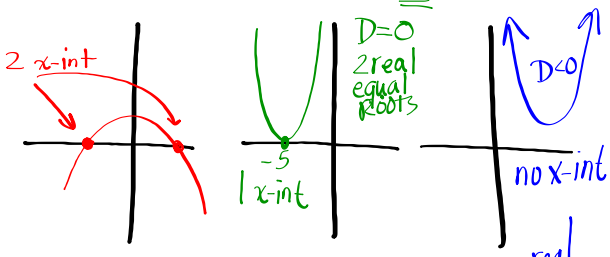
* → Solving Quad. Equations
"x-int" "roots" "zeroes" "solve"
" when does — hit the ground "

1. By Factoring
2. By Quad Formula } when in standard form ($y=ax^2+bx+c$)
3. Completing the Square Method *only if in vertex form already!!

→ Discriminant $D=b^2-4ac$

$D>0$ 2 real & unequal Roots * if perfect square then roots are rational
$D=0$ 2 real & equal Roots
$D<0$ 2 non-real & unequal Roots

Quadratic → 2 Roots!



$D>0$
2 real & unequal Roots

2 non-real Roots unequal

$y=2x^2+x-15$

use Factoring or Quad. Formula

$y=4(x+3)^2-8$

$0=4(x+3)^2-8$

$\frac{8}{4}=\frac{4(x+3)^2}{4}$

$\pm\sqrt{2}=\sqrt{(x+3)^2}$

$\pm\sqrt{2}=x+3$

$-3\pm\sqrt{2}=x$

Quadratic Equations

Set equation equal to zero.
Solve, by...

FACTORING (in standard form) → Different kinds of Factoring:
- Greatest common factor
- Inspection
- Decompostion
- Special Factors

ISOLATING (in vertex form) → Get into Vertex Form, then isolate the variable.

QUADRATIC FORMULA (in standard form, DNF) → $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

Finding Roots by...

"*Roots*", "*X-intercepts*", "*Zeros*", "*Solve*" ALL Mean the SAME THING

Word Problems... equation will be given.

(make note of inadmissible roots)

STRATEGIES: - identify what is being asked.
- solve the question.

NOTE: - Max/min (vertex y coordinate)
- Sub for x (calculate)
- sub for y (solve)

Applied Word Problems...

(make note of inadmissible roots)

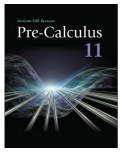
STRATEGIES: - declare variable(s).
- draw a sketch if needed
- build a quadratic equation.
- solve

Types: - equation already given
- find two numbers
- area
- ~~distance /speed /time (not now! later section)~~

Nature of the Roots...

Value of the Discriminant			
$D = b^2 - 4ac$	Real or Non-real	Equal or Unequal	Rational or Irrational
1. D> 0 but not a perfect square	Real	Unequal	Irrational
2. D>0 and is a perfect square	Real	Unequal	Rational
3. D = 0	Real	Equal	Rational
4. D< 0	Non-real	Unequal	n/a

Review



Page 258	Page 261	Page 264
7 pick a few	1	1
8 pick a few	2	4
10	5	5
14 b,c only	6	8
16 use quad formula	8	
17 use quad formula	9	
18	11	
19 pick a few		page 266
20		1-6 M.C
21		10

EXTRA HELP AVAILABLE TODAY FROM 12:15-12:35 .

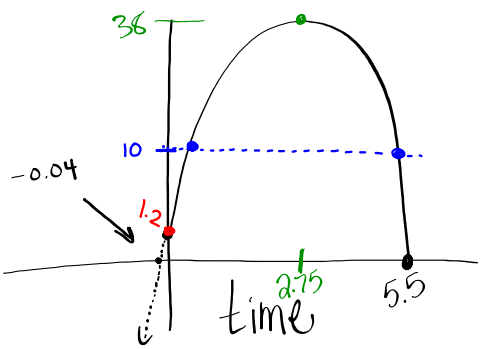
A projetile follows the path: $h(t) = -4.9t^2 + 27t + 1.2$ {t → sec, h → m}

a) What is the initial height?
1.2 m

b) What is the height after 2 seconds?
Sub
$h = -4.9(2)^2 + 27(2) + 1.2 = 35.6$

c) When does it hit the ground?
Quad Formula
$0 = -4.9t^2 + 27t + 1.2$
~~$t_1 = -.04$~~
$t_2 \doteq 5.5$

d) What is the max height reached?
Completing the Square
$h = -4.9(t - 2.75)^2 + 38.24$



A projetile follows the path: $h(t) = -4.9t^2 + 27t + 1.2$ (t → sec, h → m)

a) What is the initial height? 1.2

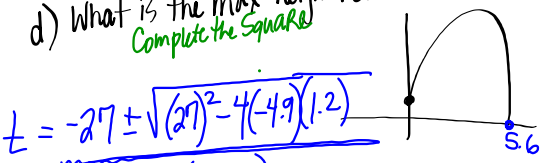
b) What is the height after 2 seconds? Sub $h = -4.9(2)^2 + 27(2) + 1.2 = 35.6$

c) When does it hit the ground? Quad Formula

d) What is the max height reached? Complete the Square

$$t = \frac{-27 \pm \sqrt{(27)^2 - 4(-4.9)(1.2)}}{2(-4.9)}$$

$t_1 = -0.04$ $t_2 = 5.6$ sec

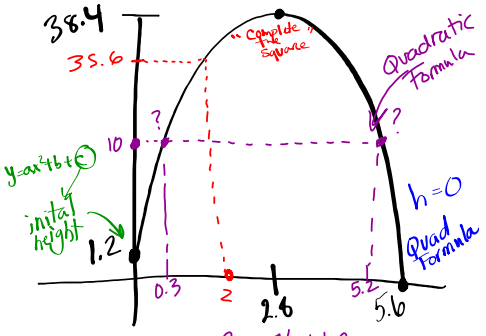


$h = -4.9t^2 + 27t + 1.2$

$= -4.9\left(t^2 - 5.51t + \frac{7.59 - 7.59}{}\right) + 1.2$

$= -4.9(t - 2.76)^2 + 37.19 + 1.2$

$= -4.9(t - 2.8)^2 + 38.4$



$h = -4.9t^2 + 27t + 1.2$

$10 = -4.9t^2 + 27t + 1.2$

$0 = -4.9t^2 + 27t - 8.8$ Quad Formula

$t = 0.3$ s

$t = 5.2$

if given time asked for height

Sub [1]

if given height, asked time

Quad Formula [4]

Converting U.S. imperial to SI

U.S.	SI
1 fl oz	= 29.5735 mL
1 pt = 16 oz	= 473.176 mL
1 qt = 2 pt	= 946.352 mL
1 gal = 4 qt	= 3.785 L

Common Cooking Units

Imperial	SI
1 teaspoon (tsp)	5 mL
1 tablespoon (tbsp)	15 mL
1 cup	250 mL
British 1 pint	568.2614 mL
1 quart	1.1356 L
1 gallon	4.5461 L

Today → hw "Page 1/Page 2" project due!

Wednesday → "Review for Test" ✓
"SampleCh. Test" on your own

Thursday - Test