

# 7.1 Notes

Wednesday, May 6, 2015 9:59 AM

### Before We Start

Do: Factoring Practice Worksheet/Review and Exploring Quad Functions Inquiry

#### *Terms*

- X-intercept
  -
- Y-intercept
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- Linear Factors
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- Slope-intercept form
  -
- Function
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#### *Skills*

- How to evaluate a function  $f(x)$  by subbing in for  $x$ .
  - Evaluate  $f(x) = 2x^2 - 3x + 4$  when  $x=3$ .
- Vertical Line Test
  - Glide a vertical line over the graph. If it crosses twice in any place, it is not a function.
- How to tell if a relation is a function
  - Cannot have repeat  $x$ -values
  - Must be one-to-one or one-to many
  - Cannot be many to one
- Solving a equation with one variable
- Graphing a linear relation
- Factoring
  - See practice sheet
- Factoring to solve an equation
  - Get everything on one side and 0 on the other side.
  - Factor.
  - Set each factor = 0. Solve.

## Chapter Seven: Quadratic Functions

### Student Notes for Excellence and Cool Math Times

- Quadratic Facts
  - A quadratic function will always have a degree of 2.
    - The first term will always have an exponent of 2. It will be the highest.
  - The graph of any quadratic function is a parabola (per-AH-blah). It has a single line of symmetry right down the centre.
    - Fun Parabola Fact: the “ends” reach out forever and ever and ever amen. They look like they are going to go straight, but they are technically still slightly curved and reaching outwards. I swear. Just trust me. It never ends. Ever.
  - Standard Form
    - $y = ax^2 + bx + c$ , where  $a \neq 0$ .
    - Characteristics of Standard Form
      - The highest or lowest point of the graph lies on the vertical line of symmetry.
      - If  $a$  is positive, the parabola “smiles.” (Opens UP)
      - If  $a$  is negative, the parabola “frowns.” (Opens DOWN)
      - Also,  $a$  determines the amount of openness of the parabola.
      - The value of  $b$  moves the parabola horizontally. This means the vertical line of symmetry also moves with it.
      - The value of  $c$  moves the parabola vertically. It is the y-intercept.

### 7.1 Examples

Use the following equation for all questions below:  $y = (3x - 2)(-2x + 1)$

1. Rewrite the relation in standard form.

$$y = -6x^2 + 7x - 2$$

$$a = -6 \quad b = 7 \quad c = -2$$

2. Is it a quadratic? (i.e. is it degree 2)

Yes

degree = highest value of an exponent in an equation

3. Does the parabola open up or down?

Down

4. Write a quadratic equation that would open up.

$$y = x^2$$

$$y = 157x^2 - 3$$

$$y = 2x^2 + 2x - 4$$

5. Identify the y-intercept.

$$c = -2$$