College Algebra Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ss. 3.1 – 3.2 Notes and Assignments

1. **Chapter 2 Review** Pp. 113-114 (14 - 22). **Test Thursday.**

2. **Sec. 3.1** Graphing Review

1. Because you already know so much about linear equations, go to the Vocabulary Check on Pg. 125. Answer questions (1 - 6) in your notebook. If you need to review any concepts, go back and read about them in sec. 3.1.
2. **HAND IN:** Pg. 126 ( 1 – 16, all), ( 18 –26, even; 28, 32, 34, 40, 46, 48, 50, 54).

**For problems 17 to 26**, in the equation, replace x and y with the given values. If it’s a true equation, then the ordered pair is a solution to the equation. This means that the point at those coordinates in on the graph of the equation.

Example: 25. y = √x + 2; (1, 3), (4, 4)

First check (1, 3): Is 3 = √1 + 2 ? Now check ( 4, 4): Is 4 = √4 + 2 ?

= 1 + 2 = 2 + 2

3 = 3 yes 4 = 4 yes

So, both sets of coordinates are solutions to the equation y = √x + 2.

**For problems 28 to 54**, equations are linear (straight lines) if x and y are both to the first power and there are no absolute values. For example, 27 is linear, but 33 and 37 are not.

**To graph**, for non-linear equations make a table of values, selecting five x-coordinates and solving for their y-coordinates. Then plot the points. One of the problems with graphing with this method is that you don’t always get the exact shape of the graph. We will learn other methods that can help.

Linear equations can be graphed by writing the equation in slope-intercept form. Solve the equation for y. The constant term is the y-intercept and the coefficient for x is the slope. Write the slope as a fraction. Plot the y-intercept on the y-axis. **From this point**, move up or down (depending on the sign of the slope) and right (as indicated by the slope numerator and denominator), and plot a point. Connect the points and extend the line in both directions.

3. **Sec. 3.2** Introduction to Functions

1. **Vocabulary:** Read the section Highlights on Pg. 191. In your notebook, write out the answers to the Vocabulary Check on Pg. 139. STUDY the vocabulary terms!
2. **HAND IN: Exercises, Pg.** 139 ( 2 – 18, even); ( 24 – 40, even); ( 42 – 80, even)

**For problems 1 to 18,** the domain is the set of x-coordinates and the range is the set of y-coordinates. If any x-coordinate has more than one y-coordinate, then the relation is NOT a function.

**Examples:** 3. D = { -2, 6, -7}; R = {4, -3, -8}. Since the x-coordinate -2 is repeated, the relation is not a function.

11. The set of ordered pairs is {( -1, 2), ( 1, 1), ( 2, 1), ( 3, 1)}

D = { -1, 1, 2, 3}; R = { 1, 2}. Since none of the x-coordinates are repeated, the relation is a function.

17. D = {0}; R = {-1, 2, 5, 100}. It is not a function because each ordered pair

has the same x-coordinate.

**For problems 23 to 40**, do the vertical line test. If the vertical line intersects more than one point on the graph of the equation, the equation is a relation, but not a function.

**Examples:** 23, 27, and 39 represent functions. 25, 29, 31, 33, 35, and 37 are not functions.

**For problems 29 to 40,** we also must identify the domain and range.

**Examples:** 31. D = [ -1, 1]; R = ( -∞, ∞ )

33. D = ( -∞, ∞ ); R = ( -∞, -3] U [ 3, ∞ )

35. D = [ 2, 7 ]; R = [ 1, 6 ]

**For problems 41 – 52**, the equation is a function if there is NO absolute value of y (x is okay!) or NO y2.

**For problems 53 – 68**, substitute the given value in for x and simplify. That’s it!

Examples: 55. h(-3) = 5(-3)2 – 7 = 38

This means that the graph of the equation contains the point ( -3, 38).

We can also say that the “value of the function” is 38 when x is -3.

**For problems 69 to 80**, if a problem says to find the f(-1), for example, this means to find the y-coordinate for the given x-coordinate. If the problem tells you to find the value of x when f(x) = -5, for example, this means to find the x-coordinate when the y-coordinate is -5.

**For Problem 73**, look at the graph of f(x) above problem 69. The f( -1) is the y-coordinate when x = -1. From the graph, f( -1) = -2.

The answer is f( -1) = -2.

**For problem 77**, look at the graph of f(x). When y = -5, x is 0 and -4.

The answer is x = 0, -4.