Pre-Calculus Notes   Section 1-1   Day 1

Opener: Practice quiz number 12 and 13

Notes on Functions and Relations

Relation: a set of ordered pairs

Function: a relation in which each x value maps to exactly 1 y value.

Domain: the x values of the relation (without repeat)

Range: the y values of the relation (without repeat)

Vertical Line Test: if a vertical line can hit the graph of a relation more than once it fails the vertical line test and is not a function.

Example from 1-1A – Number 20

Your Turn – Number 21 & 34

Example from 1-1A – Number 23 & 33

Your Turn – Number 24 & 36

Creating tables to graph lines: use 5 values

Example from 1-1A – Number 26 & 31

Your Turn – Number 27 & 28

Assignment: finish 1-1A

Day 2
Opener: #1 and 4 on Practice Quiz

Notation for Domain: $\{x \mid x<4\}$ says x such that x is less than 4.

      Example from 1-1B – Number 38

      Your Turn – 39 & 40

Functions describe a relationship between two variables and gives this relationship a name.

      example: $f(x) = 2x$

x is the independent variable
y is the dependent variable
Function Notation - Replace the x with what is inside the parenthesis

      Example from 1-1B – 41 & 44

      Your Turn – 42 & 47

      Example from 1-1B – 41 & 44

      Your Turn – 42 & 47

Domain of a function (The Red Flags)
1.any x value that creates a 0 in the denominator is not allowed.
2. any x value that creates a negative inside an even radical is not allowed examples - find any red flags and state the domain.

Check work on the calculator.

1. $f(x) = 12x$

2. $h(x) = \dfrac{x}{x-2}$

3. $h(x) = \dfrac{3x-1}{2x^2 - 8}$

Your Turn – 48

Assignment – finish 1-1B

Day 3

Opener: Practice Quiz number 2

Notes: The new red flag
No negatives under even radicals

Example from Domain Worksheet – 49

Your Turn – 50

examples
State the domain:

$$f(x) = \frac{x-1}{x}$$

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

**graph this one*

$$h(x) = \frac{1}{\sqrt{x-1}}$$

GAME

Assignment - Finish the Domain Worksheet

Opener: practice quiz number 3

Example: from 1-2A
  Number 11

Your Turn
  Number 12

Notes:
Composition of functions
 - Inserts one function into another function

Notation where f and g are functions

$[f \circ g](x)$ is the same as $f(g(x))$ and means that the function $g(x)$ is inserted into the function $f(x)$

$[g \circ f](x)$ is the same as $g(f(x))$ and means that the function $f(x)$ is inserted into the function $g(x)$

type 1 - when finding a specific value, work inside-out

        Example $f(x) = x^2 - 3$
                       $g(x) = (x - 2)^3 + 1$

                       find $f(g(0))$

        Your Turn $f(x) = 2x - 3$
                         $g(x) = x^2 - 2x$

                         find $f(g(2)) =$

type 2 - when finding an equation, work outside-in by writing the outside equation with parenthesis instead of x. Then insert the inside equation into the parenthesis.

        Example from 1-2A
        Number 15 & 23

        Your Turn
        Number 16

Assignment: finish worksheet 1-2A

Day 2

Notes:
Iteration: plugging the answer back into the equation

The answers are $x_0, x_1, x_2, \ldots$

Example from 1-2B
Number 25

Your Turn
Number 26

Example from 1-2B
Number 28

Your Turn
Number 30

Assignment: finish 1-2B

Pre-Calculus Notes   Section 1-3   Day 1

Opener -- game

Part 1: Graphing a line using a t-table

      Example from 1-3A
      Number 12

      Your Turn
      Number 16

Part 2: Graphing a line using y=mx+b

      Example from 1-3A
      Number 20

      Your Turn
      Number 17

Part 3: Graphing a line using the intercepts
      X –intercept: plug in 0 for y and solve
      Y--intercept: plug in 0 for x and solve

      Example from 1-3A
      Number 14

      Your Turn
      Number 23

Part 4: Zeros of the Function: where the graph hits the x-axis
      By Hand - Plug 0 in for y and solve for x
      On a calculator - Use the graphing calculator by entering 0 into Y_2 and find the intersections.

      Example from 1-3A
      Number 25

      Your Turn
      Number 31

Assignment: finish 1-3A

Pre-Calculus Notes   Section 1-4   Day 1

Opener – practice quiz #7

Notes: Four types of slope
            Positive   Negative   Zero   No-Slope

Notes: Equations of lines   Y = mx + b form

Constant Functions - Tells what axis it hits and where it hits it.
Examples: y=3   x = -2

            Example from 1-4A
            Number 11 and 15

            Your Turn
            Number 13 and 21

Notes: Slope = the steepness of a line, written as a fraction (rise over run)

            equation:

            Examples from 1-4A
            Number 17

            Your Turn
            Numbers 19

Notes: Writing Equations in point-slope form $y - Y_1 = m (x - X_1)$ where (X_1, Y_1) is a point on the line.

            [This is just the slope formula with the x's moved to the right.]

            Example from 1-4A:
            Number 12 and 20

            Your Turn
            Number 14 and 18

Assignment: finish 1-4A

Pre-Calculus Notes   Section 1-5   Day 1

Opener – practice quiz #8 and 9

Notes - Sec 1.5

Parallel lines have the same slope

Perpendicular lines have opposite reciprocal slopes

Coinciding lines are identical in equation and graph.

Examples
$y = 2x$
$y = 2x - 3$
$y = -1/2 \; x + 4$

Example from 1-5A
Number 12

Your Turn
Number 14 and 19

Finish the practice quiz

Assignment: finish worksheet 1-5A and study for the quiz.