PC 12 Session 1

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Lockdown Drill ??

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Pre-Calculus 12 Session 1
Tuesday, January 11, 2022

DO NOT WRITE THIS DOWN – I WILL GIVE YOU A COPY!

1. Introductions, Attendance and Housekeeping
   A. Student Information Sheet
   B. Course Outline
      - Course delivery
      - Class times
      - Assistance outside of class-time
      - Health Protocols
      - Required materials and Graphing Technology Options
      - Classroom Etiquette and Housekeeping
      - Assessment and Evaluation
      - How to best succeed in the course

2. Connecting to the Secured Student Network and Your Office 365 Credentials

3. Relations, Definition of a Function, Review of Graphing, Domain and Range from a graph, *more next day.* Domain and Range from an Equation, Important "Base Functions" and their Key Points *more next time   next day   next day -*

4. 1.1 Horizontal and Vertical Translations of Graphs of Functions and Mapping Notation (if time) *next day!*

Homework:

Readings: Sections 1.1 (pages 6 to 12), 1.2 (pages 16 to 27), 1.3 (pages 32 to 38), 1.4 (pages 44 to 51) from the textbook. These readings will give you an insight on what we will be covering next class. *and the one after*

Practice: This will depend on how far we get today!

Should we finish Section 1.1 today (not likely): page 12: 2, 3c,d, 4a,c, 5, 8, 11.

Other: (if any)

Health protocols

- a mask must be worn at all times except when drinking or eating.

- try to maximize space between yourselves

- Sanitize your hands when you come into class.

Unit 1: Transformations of Functions and their Graph

Unit 1

Transformations and Functions

Functions help you make sense of the world around you. Many ordinary measuring devices are based on mathematical functions:

- Car odometer: The odometer reading is a function of the number of rotations of the car's transmission drive shaft.
- Display on a barcode reader: When the screen displays the data about the object, the reader performs an inverse function by decoding the barcode image.

Many natural occurrences can be modelled by mathematical functions:

- Ripples created by a water droplet in a pond: You can model the area spanned by the ripples by a polynomial function.
- Explosion of a supernova: You can model the time the explosion takes to affect a volume of space by a radical function.

In this unit, you will expand your knowledge of transformations while exploring radical and polynomial functions. These functions and associated transformations are useful in a variety of applications within mathematics.

Looking Ahead

In this unit, you will solve problems involving...
- transformations of functions
- inverses of functions
- radical functions and equations
- polynomial functions and equations

A function is a special kind of relation.

- You need to be able to determine if a given relation is or is not a function

→ if given a set of ordered pairs

→ if given a table of values

→ if given a graph (use vertical line test)

→ if given the equation of the relation ["y^2" means not a function, "no y" means not a function

eg: $x = y^2 - 5$
$x = -2$

Domain and Range of Relations and Functions

Set notation

Domains & Ranges must be given in "set notation" real numbers $\mathbb{R}$

$\{x \mid x \in \mathbb{R}\}$ the set of all x-values such that x is an element of the real numbers

such   element
that   of

- we often use $\geq, >, \leq, <$

We need to be able to state the domain and

range given.

1) a set of ordered pairs

$$\{(-2, 7), (-9, 3), (2, 5), (0, 0), (1, 9)\}$$

D: $\{-2, -9, 2, 0, 1\}$ R: $\{7, 3, 5, 0, 9\}$

D: $\{-9, -2, 0, 1, 2\}$ R: $\{0, 3, 5, 7, 9\}$ $\{$ in increasing order.

2) given a table of values

x	y
-3	3
-5	3
2	5
2	9
3	7

not a function

D: $\{-5, -3, 2, 3\}$ ← don't list twice.
R: $\{3, 5, 9, 7\}$

3) Given a graph.

or

4) given the equation of a relation or function.

(more next day).