**Unit 1: Properties of Functions and Intro to Rates of Change**

Things to know:

1. Transformations: how to apply expansions, compressions, reflections and shifts to create a graph... know the shape of all parent functions from grade 11.
2. Function notation: how to perform operations on functions or with a graph; ex 🡪 f + g, f\*g, f(g(x-1)), etc…
3. State various properties of a function such as domain and range, x-intercepts, y-intercepts, discontinuities, intervals of increase/decrease, symmetry (even/odd/neither), and end behaviours.
4. Determine the inverse of a function from the graph, equation, or table of values.
5. Determine the degree of a polynomial function: y = x3 – x2 🡪 degree = 3
6. Represent single variable absolute value equations on a numberline.
7. Understand and be prepared to define the concept of a secant line and tangent line and how they apply to rates of change.
8. Calculate average rates of change using the slope of a secant on a graph or algebraically given the function.
9. Calculate instantaneous rate of change using the slope of a tangent or the

difference quotient: , where h = 0.01

1. Identify if a point on a function is stationary and identify its type (local max/min or point of inflection) by calculating IROCs at and near the point of interest.

\*\*\***Note:** While all grade 11 skills relevant to this course were reviewed at the beginning of this course, only content related to graphing transformations and function notation are emphasized in this unit test; ie, study the material from review days 1(function notation), 5(transformations) and 6(more transformations + inverses) then every lesson that followed after that. All other skills from grade 11 may be incorporated into questions but they will not be the emphasis. For example, you won’t be asked to solve 2x = 15 or sinx = 0.5 but some basic knowledge of the graphs y = 2x – 3 or y = 2sinx – 5 may be required if you are asked to describe their properties.**\*\*\***

Textbook: pg 60# 1abc, 2, 3, 4, 5, 6, 7ac, 8(don't graph), 9af, 10ab, 11a, 12, 13, 18ac, 19de, 20

pg 116#1ac, 2, 3, 5b, 6a, 11ace, 13