Test 2 Review Sheet

This sheet contains the material from each section that will be covered in test 2.
This list is by no means exhaustive.

2.3 Increasing Decreasing Functions

- Definition of increasing and decreasing functions at intervals.
- Be careful with the open/closed intervals! A graph does not increase nor decrease at a local minimum or maximum, so make sure you don't include those points.
- Know how to compute average rate of change between two points. How is it related to the slope of the graph?

2.4 Transformations of Graphs

- The main transformations are translations, compressions and expansions horizontally and vertically. Reflections across axes (must state which axis!).
- Understand how $af(bx + c) + d$ is related to $f(x)$ geometrically. What does each letter represent?
- Know how to check if a functions is odd or even or neither. What is the geometric meaning of even and odd functions?

2.5 Maxima and Minima of Quadratics

- Know how to switch between standard form and general form of quadratics. (completing the square)
- Know how to compute the vertex by using standard form and hence computing minima and maxima.

2.6 Modelling Functions

- Practice practice practice! Make sure you understand the examples we went through in class.
- Even though calculators are permitted, you may want to use the inequality trick to compute minima and maxima quickly to couble check.

2.7 Combining functions

- Know different ways of combining functions to get a new functions.
- Know the domain of the new functions.
- Remember order of composition matters.

2.8 One-to-One Functions and Inverses

- Know how to show if a function is 1-1 graphically and algebraically.
- Computing inverses of some simple functions.

3.1 Polynomials and Their Graphs

- Definitions! Nomenclature of information extracted from the general polynomial $f(x) = a_n x^n + a_{n-1}x^{n-1} + \cdots a_1 x + a_0$.
- Properties of their graphs, i.e. smooth, continuous, etc.
- Computing end behaviours and how it is related to their graphs.
- x and y intercepts.

- Intermediate Value Theorem.
- Examples of graph with zeroes of different multiplicites.
- Local extrema.

3.2 Polynomial Division

- Division Algorithm - understand the degrees.
- Synthetic division and applying it to evaluate polynomials at a given x value.

3.6 Rational Functions

- Definitions.
- End behaviours, intercepts and asymptotes.
- Know how to use the above to sketch the graph of a rational function. Use of test values.

4.1 Exponential Functions

- Definition of exponential function.