

Review: Chapters 0, 1 & 2

- Basic arithmetic. If your grasp on arithmetic, especially with variables, is shaky, I suggest you study for it as follows: Make a table of all the rules contained in Chapter 0. Do (or re-do) Problem Set 0 and perhaps some problems from Chapter 0 and at *each* step, cite exactly which rule is used.
- Practise Long Division of polynomials. Practise how to read off the dividend, divisor, quotient and remainder from a Long Division.
- Functions.
 - Concepts regarding functions: domain, codomain, range, correspondence, graphs, etc.
 - Know how to compute sums, differences, products, quotients, and compositions of functions, and when these operations are defined.
 - Know the Vertical Line Test for functionality.
 - Know how to locate the points at which a given function is undefined by examining its formula. This amounts to looking for divisions by zero, even roots of negative quantities, etc.
 - Know the following types of functions: linear, quadratic, rational. Practise sketching each type. Know the following terms:
 - * linear: slope, intercepts. Parallel (straight) lines have equal slopes, while slopes of (non-vertical) perpendicular lines multiply to -1 .
 - * quadratic: vertex, axis of symmetry, intercepts, opening upward or downward, discriminant.
 - * rational: singularity, intercepts, horizontal, vertical, oblique asymptotes. You will need to know how to do polynomial long division in order to sketch rational functions.
 - * The x -intercepts of a function are also called the *zeros* of the function.
 - Linear functions: Know how to switch between the different forms of representing linear functions.
 - Quadratic functions: Know how to find the maximum or minimum of a given quadratic function. Learn how to recognize you are being asked to find one when doing word problems.
- Equations.
 - Solve single linear equations in one variable.
 - Solve single equations in one variable involving the absolute sign.
 - Solve single quadratic equations in one variable — by factoring, by the Quadratic Formula. Know how to determine the solution properties of an equation with its discriminant.
 - Solve systems of n linear equations in n unknowns ($n = 2, 3$), by the method of Gaussian Elimination. If you'd like, you are welcome to use matrix notation, but you are not required to know it for Chapters 0, 1 and 2.
 - * Know the different solution possibilities to these systems: unique solution, infinitely many solutions or no solutions. Know the geometry corresponding to each of these situations.
 - * Know how to properly express the solution of an infinitely-many-solution system with a parameter.
 - Solve systems of two equations, 1 linear and 1 quadratic, by the method of substitution.
- Applications.

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- Linear systems of equations: Know how to translate information in a word problem into equations.
 - Cost, Revenue, Profit.
 - * Cost, revenue, profit functions can be linear, quadratic, or rational.
 - * Break-even point is simply the intersection of the cost and revenue functions.
 - * (Total) Cost = Fixed Cost + Variable Cost.
 - * Know how to work with *cost per unit*.
 - Supply and Demand.
 - * Supply and Demand curves may be linear, quadratic, or rational. Know the concept of *market equilibrium*. Know the difference between a *demand function* and *quantity demanded*. Basically, a demand function is the how quantity demanded depends on price. Similarly for Supply.
 - * Know the effect of a tax on suppliers on the supply function and consequently the market equilibrium.
 - * Know that when asked to find the market equilibrium, you are being asked to find the intersection of the Supply and Demand curves.