Studyguide for Midterm Exam No. 2, November 12 2008

Business Algebra Math 1090

1 Material

The exam will cover 0.7, 2.1 - 2.4, 2.6, 3.1-3.4, 4.1, 4.2, 5.1. A good check list for review are the key terms and formulas at the end of chapter 2,3 and 4 (of course only for the sections we covered).

Make sure you know how to do the problems on the quizzes and homeworks. The majority of the problems on the exam will be very similar to those problems.

Doing the WebWorks homework and the additional practice WebWork before the exam will certainly be beneficial!

Note that the answers to odd problems are in the back of the book, so you can use these problems to practice. Also note that for each chapter in the book there is a review section where you can find more problems to practice on.

2 Algebraic expressions

You have to know how to add algebraic fractions, such as 0.7, Problems 9-35 (see Chapter 0.7 for methods how to deal with them).

3 Quadratic equations and functions

- quadratic formula, and apply it in a given problem to find the solutions to a quadratic equation (2.1, Problems 21-27)
- find the vertex of a parabola, and determine whether it is a maximum or minimum. (2.2, Problems 7-11)
- Applications to business: revenue, cost and profit functions, break-even points, be able to maximize/minimize these functions if they are quadratic (2.3, Problems 15 26), demand and supply functions, find equilibrium (2.3, Problems 5 14).
- Functions and their graphs: match functions with their graphs (2.4, Problems 1-22); graph and evaluate functions (2.4, Problems 23-34).

• Composite and Inverse functions: find composite function (notation $f \circ g$) (2.6, Problems 5-8), decide whether a function is one-to-one, and find inverse function (2.6, Problems 16 - 30), interpret inverse function

4 Matrices

- Multiplication of a matrix by a scalar, adding two matrices (3.1, Problems 13-26)
- Know when you can multiply two matrices, know how to multiply matrices (3.2, Problems 5-20, 25-34)
- Find transpose of a matrix (notation: A^T) (Problems 3.1, 9-10).
- Gauss-Jordan elimination (Problems 3.3, 29-42)
- Find the inverse of a matrix, determine whether a 2 × 2 matrix has an inverse, formula for inverse (3.4, Problems 5-12), and method for 3 × 3 matrix (3.4, Problems 13-22)
- Using inverse matrices to solve systems of linear equations (3.4, Problems 31-34)

5 Linear programming

Solve linear programming problems (4.2, Problems 11 - 26), and setting up a linear programming problem (4.2, Problems 27 - 47).

6 Exponential functions

Evaluate exponential function (5.1, 29-35), the number e, find exponential function that passes through two given points to model population or money in bank account etc, for example the following problem:

Assume your networth is modeled after an exponential function. If your networth in 2009 is \$1000, and in 2020 it is \$20000, find the exponential function n(t), describing your networth t years after 2009. Use this function to estimate your networth in 2030.