QMI Lesson 1: Syllabus, Course Policies, & Prerequisite Topics

C C Moxley

Samford University Brock School of Business

26 January 2015

Course Info

Course:	BUSA130 Quantitative Methods I
Instructor:	Caleb Moxley
Office Hours:	by appointment or 3:20-4:30PM
Email:	cmoxley1@samford.edu
Website:	people.cas.uab.edu/∼ccmoxley

Required Text

Tan, S.T. (2012). *Applied Calculus for the Managerial, Life, and Social Sciences: A Brief Approach, 9 th Edition*
(ISBN-13: 9780538498906)

and

Student Solutions Manual
(ISBN-10: 0840068476).

Course Objectives

This course is intended to improve students' quantitative competencies, foster intellectual curiosity, and enhance mental dexterity. In particular, students will learn to

1. evaluate functions and their graphs
2. define and conceptualize the derivative
3. use differentiation to solve business problems
4. define and conceptualize the integral
5. use integration to solve business problems

Computer Skills

You may use technology to check assignments.

You must be able to access the course website, the portal, and Samford email.

Evaluation

3 Exams	45%	15% each
Midterm Exam	25%	Cumulative, 11 March 2015
Comprehensive Final Exam	30%	See syllabus for date/time

Letter Grade (x) Scale:

$93 \leq x$	A	$73 \leq x < 77$	C
$90 \leq x < 93$	A-	$70 \leq x < 73$	C-
$87 \leq x < 90$	B+	$67 \leq x < 70$	D+
$83 \leq x < 87$	B	$63 \leq x < 67$	D
$80 \leq x < 83$	B-	$60 \leq x < 63$	D-
$77 \leq x < 80$	C+	$x < 60$	F

Attendance

Attendance is recorded, but it is not mandatory. You will not be penalized for poor attendance.

Class Decorum

- Arriving to class on time is expected.
- Please bring a device on which to use the Socrative app

Students with Special Needs

Samford University complies with Section 504 of the Rehabilitation Act and with the Americans with Disabilities Act. Students with disabilities who seek accommodations must make their requests by contacting Disability Support Services located in Counseling Services on the lower level of Pittman Hall, or call 205.726.4078/2105. I will grant reasonable accommodations only upon written notification from Disability Support Services. It is the student's responsibility to seek accommodations.

Integrity

- Work independently on tests.

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- The Samford Honor Code will apply to all aspects of this course.

Time Dedication

You will be held to a professional standard in this course. Your work should be carefully and thoughtfully completed. You should come well-prepared to the exams and quizzes. This level of performance cannot be achieved unless you dedicate significant time outside of class to work in this course. You should, at the minimum, expect to spend 6 hours per week outside of class on work for this course.

Prerequisite Topics: Exponents

Name of Property	Property	Example
Product	$a^n \cdot a^m = a^{n+m}$	$5^6 \cdot 5^3 = 5^{6+3} = 5^9$
Division	$\frac{a^n}{a^m} = a^{n-m}$	$\frac{5^6}{5^3} = 5^{6-3} = 5^3$
Power	$(a^n)^m = a^{n \cdot m}$	$(5^6)^3 = 5^{6 \cdot 3} = 5^{18}$
Distribution	$(ab)^n = a^n \cdot b^n$	$(-5w)^3 = (-5)^3 \cdot w^3$
Fraction	$(\frac{a}{b})^n = \frac{a^n}{b^n}$	$(\frac{5}{x})^3 = \frac{5^3}{x^3}$

Prerequisite Topics: Binomial Multiplication

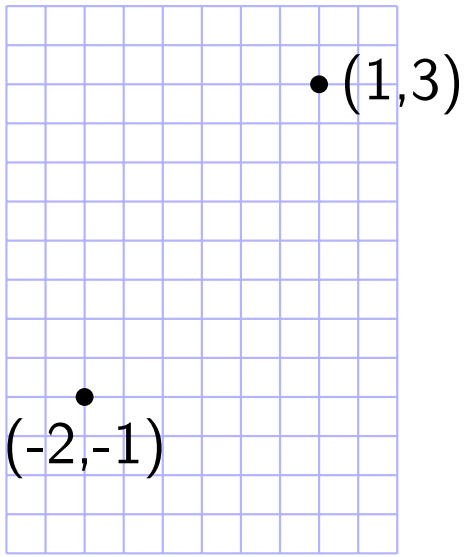
Rule	Example
$(a \pm b)^2 = a^2 \pm 2ab + b^2$	$(x-2)^2 = x^2 - 4x + 4$
$(a+b)(a-b) = a^2 - b^2$	$(x-\sqrt{2})(x+\sqrt{2}) = x^2 - 2$

Prerequisite Topics: Distance Formula

The distance d between two points (x_1,y_1) and (x_2,y_2) in the Cartesian plane is given by

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}.$$

You can see the derivation of this formula in the figure below:



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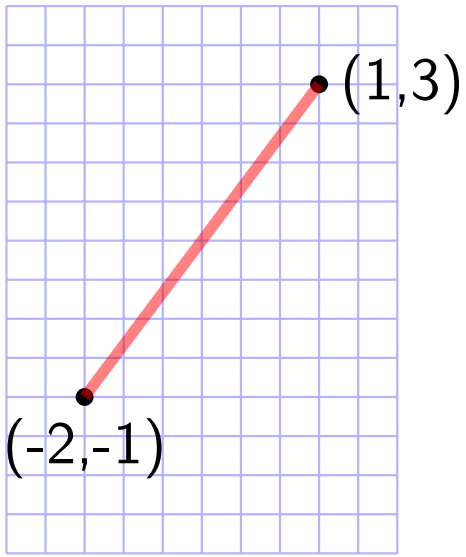

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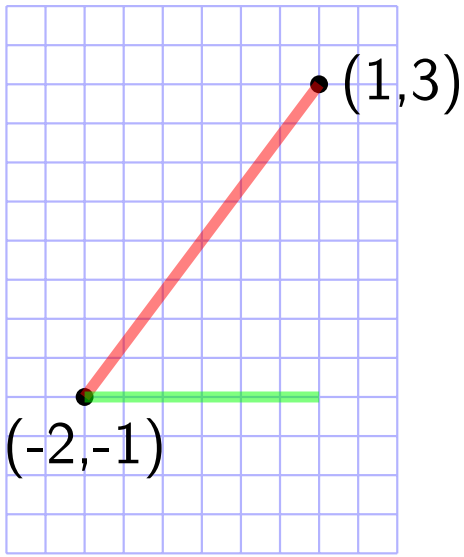

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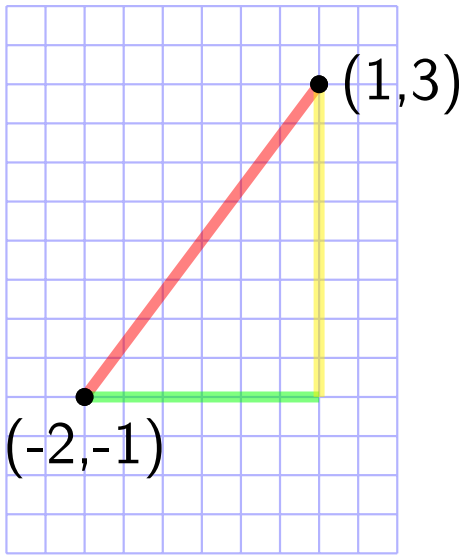

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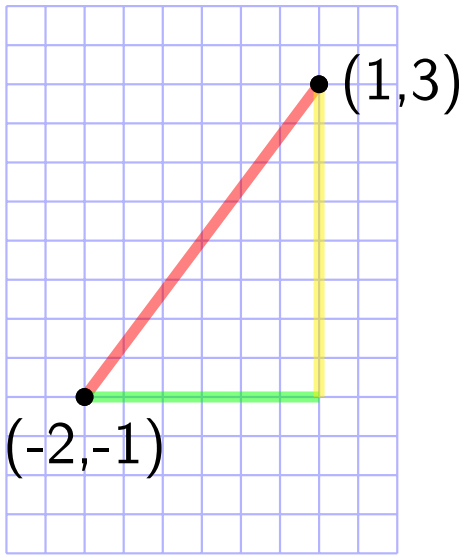


Use Pythagorean Theorem!

Prerequisite Topics: Parallel and Perpendicular Lines

The slope m of a line is the ratio of its rise to its run: $m = \frac{\Delta y}{\Delta x}$.
Given two points, (x_1, y_1) and (x_2, y_2), $m = \frac{y_1 - y_2}{x_1 - x_2}$.

Definition (Parallel)

Two lines with slopes m_1 and m_2 are parallel if $m_1 = m_2$.

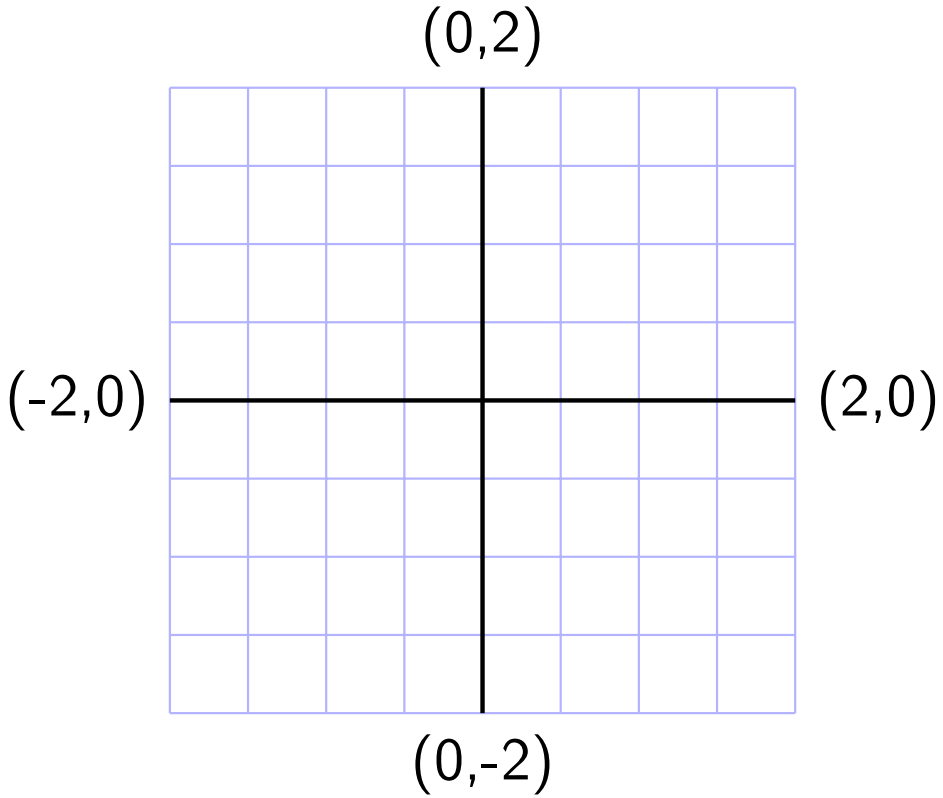
Definition (Perpendicular)

Two lines with slopes m_1 and m_2 are perpendicular if $m_1 = -\frac{1}{m_2}$

Prerequisite Topics: Parallel and Perpendicular Example

The example below shows parallel and perpendicular lines.

$y = 3x$, $y = 3x + 1$, $y = -\frac{1}{3}x - 1$.



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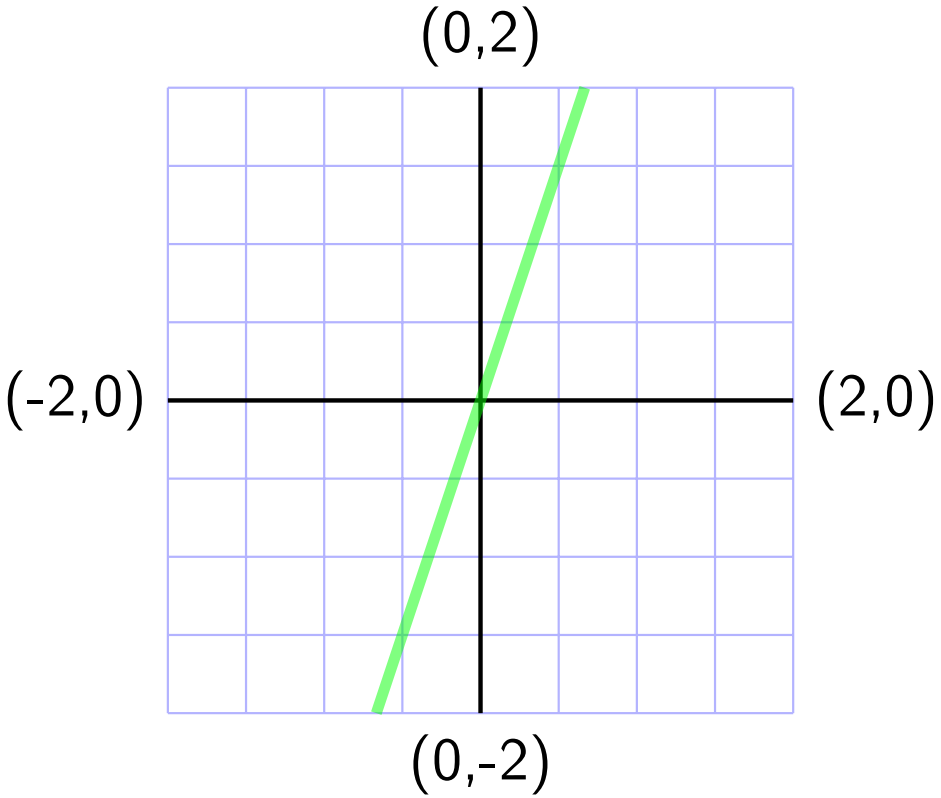

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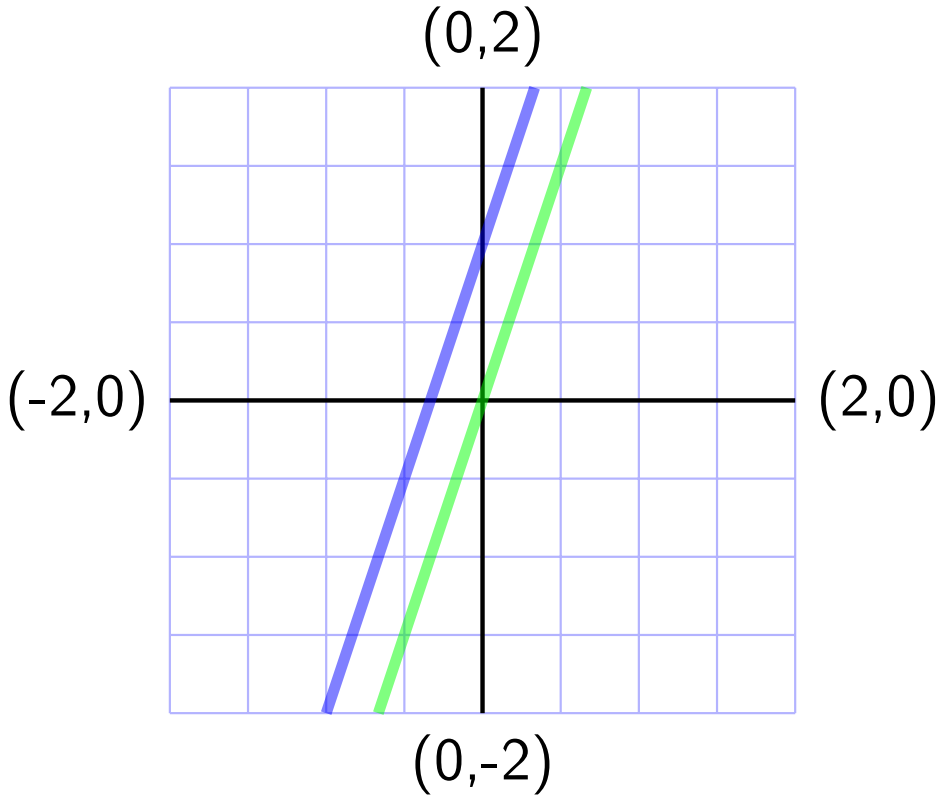

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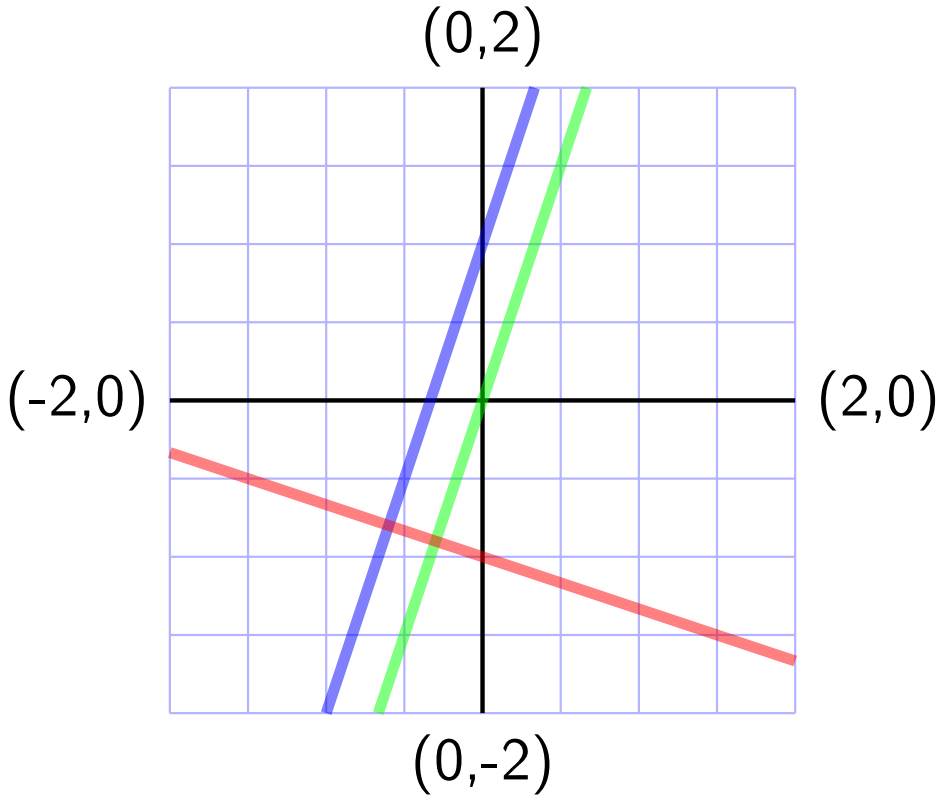

Other Prerequisite Topics

You should remind yourself of the quadratic formula, the standard equation of a circle, vertical and horizontal lines and their equations, point-slope and slope-intercept equations of a line, the general form of a linear equation, real number lines, the Cartesian coordinate system, open and closed intervals, half-open intervals, finite and infinite intervals, polynomials, roots of a polynomial, absolute value, the triangle inequality, and rational expressions.

Assignment

You have no official homework on Chapter 1, but completing Chapter 1 Review (pgs. 47-8) is highly recommended.

You are expected to review this material on your own.