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

C C Moxley

Samford University Brock School of Business

25 August 2014

Course Info

Course:	BUSA130 Quantitative Methods I
Instructor:	Caleb Moxley
Location & Time:	DBH216, MW(F) at 3:30-4:35PM
Office Hours:	by appointment or 4:35-5:00PM
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.

Please use Word's built-in equation editor or a LaTeX-editor to prepare your assignments.

Evaluation

Assigned Homework	20%	Assigned most classes
Presentations	10%	Points available most classes
Quizzes	10%	Three quizzes, 3.33% each
Exams	45%	Three exams, 15% each
Comprehensive Final Exam	25%	8 Dec 2014, 6:00PM

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

You are allowed four absences (excused or unexcused) in the course without consequences to your grade. After four absences, you will be docked one-third of a letter grade for each additional absence. If you expect to need more than four absences for legitimate reasons, you must provide excuses for *every* absence. For instance, a student with five unexcused absences will be docked one-third of a letter grade, and a student with four excused absences and one unexcused absence will also be docked one-third of a letter grade.

Homework Rubric

Score	All problems attempted	Graded problem correct
0	No	No
1	Yes	No
1	No	Yes
2	Yes	Yes

Presentation Rubric & Choosing Presenter

Score	Description
0	No significant progress towards a solution
1	Significant progress towards a solution
2	A full, well-explained solution

Presentation Rubric & Choosing Presenter

Score	Description
0	No significant progress towards a solution
1	Significant progress towards a solution
2	A full, well-explained solution

1. The volunteer with the fewest points will be given the first chance to work the problem.

Presentation Rubric & Choosing Presenter

Score	Description
0	No significant progress towards a solution
1	Significant progress towards a solution
2	A full, well-explained solution

1. The volunteer with the fewest points will be given the first chance to work the problem.
2. If there is a tie for the volunteer with the fewest points, the presenter will be chosen randomly.

Presentation Rubric & Choosing Presenter

Score	Description
0	No significant progress towards a solution
1	Significant progress towards a solution
2	A full, well-explained solution

1. The volunteer with the fewest points will be given the first chance to work the problem.
2. If there is a tie for the volunteer with the fewest points, the presenter will be chosen randomly.
3. If there are no volunteers, we will move on to another problem and repeat the process.

Presentation Rubric & Choosing Presenter

Score	Description
0	No significant progress towards a solution
1	Significant progress towards a solution
2	A full, well-explained solution

1. The volunteer with the fewest points will be given the first chance to work the problem.
2. If there is a tie for the volunteer with the fewest points, the presenter will be chosen randomly.
3. If there are no volunteers, we will move on to another problem and repeat the process.
4. If during a presentation, a flaw has been found that cannot be reconciled by the presenter, he or she will yield the board.

Presentation Rubric & Choosing Presenter

Score	Description
0	No significant progress towards a solution
1	Significant progress towards a solution
2	A full, well-explained solution

1. The volunteer with the fewest points will be given the first chance to work the problem.
2. If there is a tie for the volunteer with the fewest points, the presenter will be chosen randomly.
3. If there are no volunteers, we will move on to another problem and repeat the process.
4. If during a presentation, a flaw has been found that cannot be reconciled by the presenter, he or she will yield the board.
5. Each problem should take only a couple minutes.

Class Decorum

- Arriving to class on time is expected.
- Please keep all electronic devices silenced and put away.
- You may take notes by hand only. Electronic copies of my notes will be available on the course website, so you will not need to take notes electronically.

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 quizzes and tests.

Integrity

- Work independently on quizzes and tests.
- Homework cannot be collaborated on. Only use the text as a resource. You may use anything to prepare presentations.

Integrity

- Work independently on quizzes and tests.
- Homework cannot be collaborated on. Only use the text as a resource. You may use anything to prepare presentations.
- Include: "This work is mine and mine alone. [signature]" in all assignments.

Integrity

- Work independently on quizzes and tests.
- Homework cannot be collaborated on. Only use the text as a resource. You may use anything to prepare presentations.
- Include: "This work is mine and mine alone. [signature]" in all assignments.
- 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

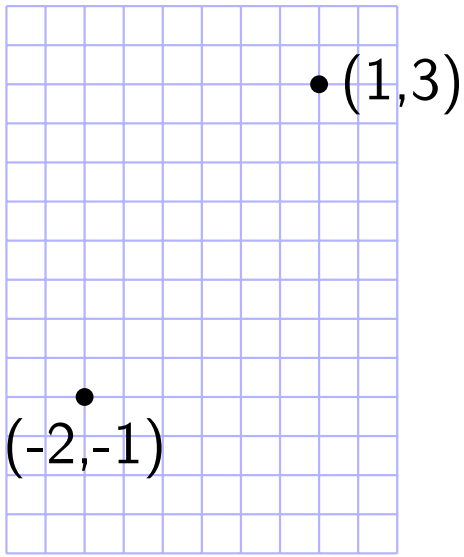
Rule	Example
$(a \pm b)^2 = a^2 \pm 2ab + b^2$	$(x-2)^2 = x^2 - 4x + 4$
$(a+b)(a-b) = a^2 - b^2$	$(x-\sqrt{2})(x+\sqrt{2}) = x^2 - 2$

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:

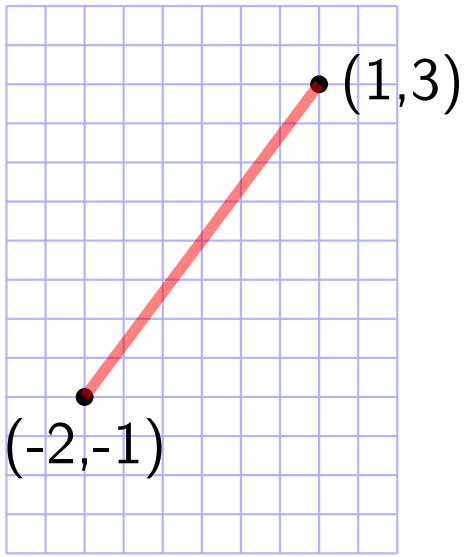


Prerequisite Topics: Distance Formula

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:

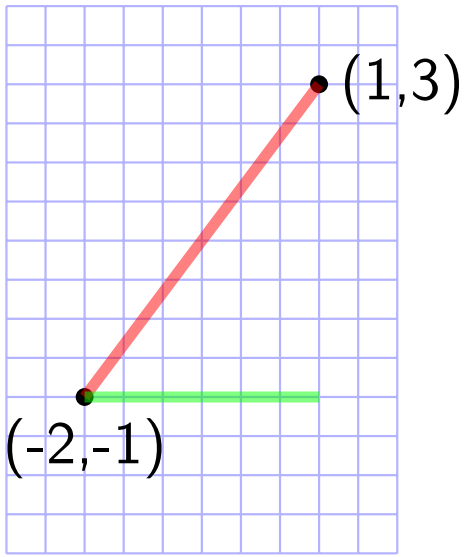


Prerequisite Topics: Distance Formula

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:

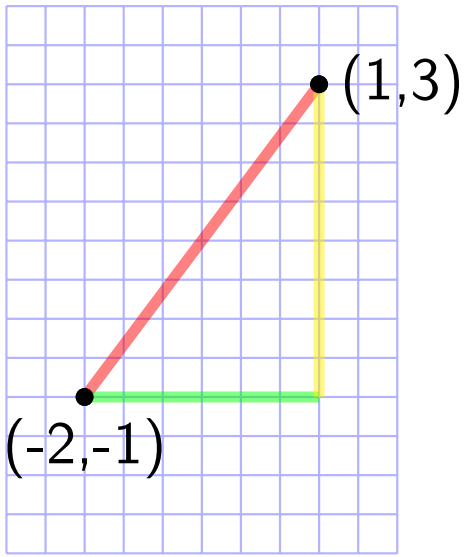


Prerequisite Topics: Distance Formula

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:

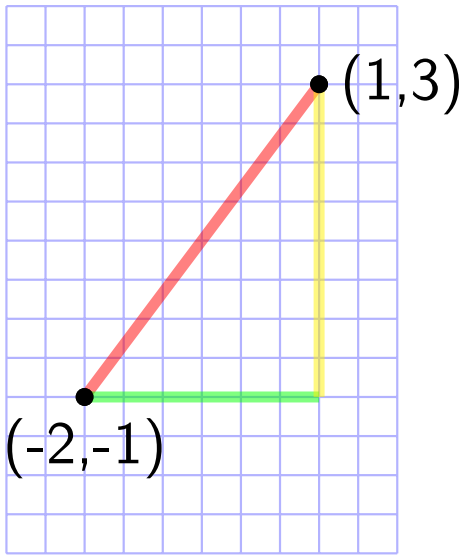


Prerequisite Topics: Distance Formula

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:



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 $m_1 = m_2$.

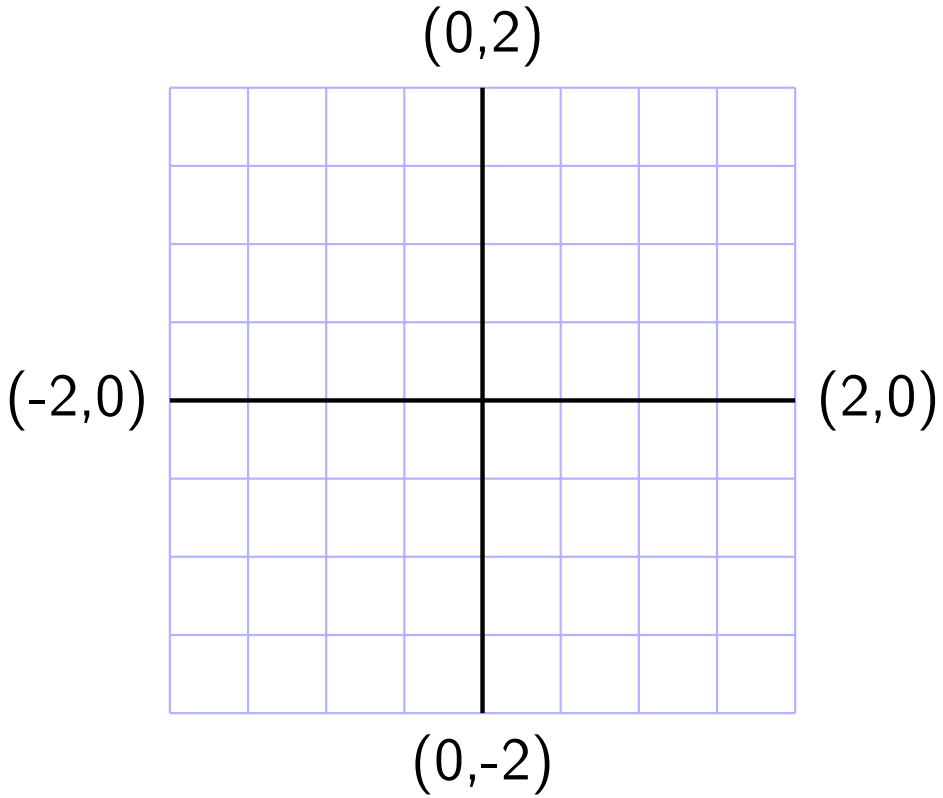
Definition (Perpendicular)

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.

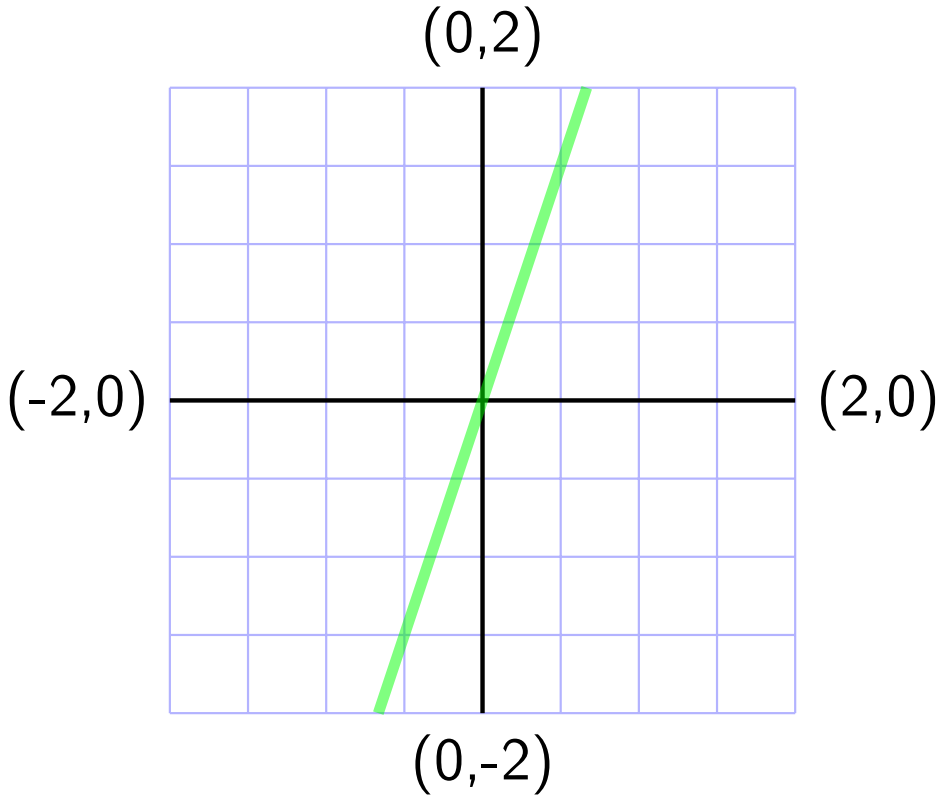
$y = 3x$, $y = 3x + 1$, $y = -\frac{1}{3}x - 1$.



Prerequisite Topics: Parallel and Perpendicular Example

The example below shows parallel and perpendicular lines.

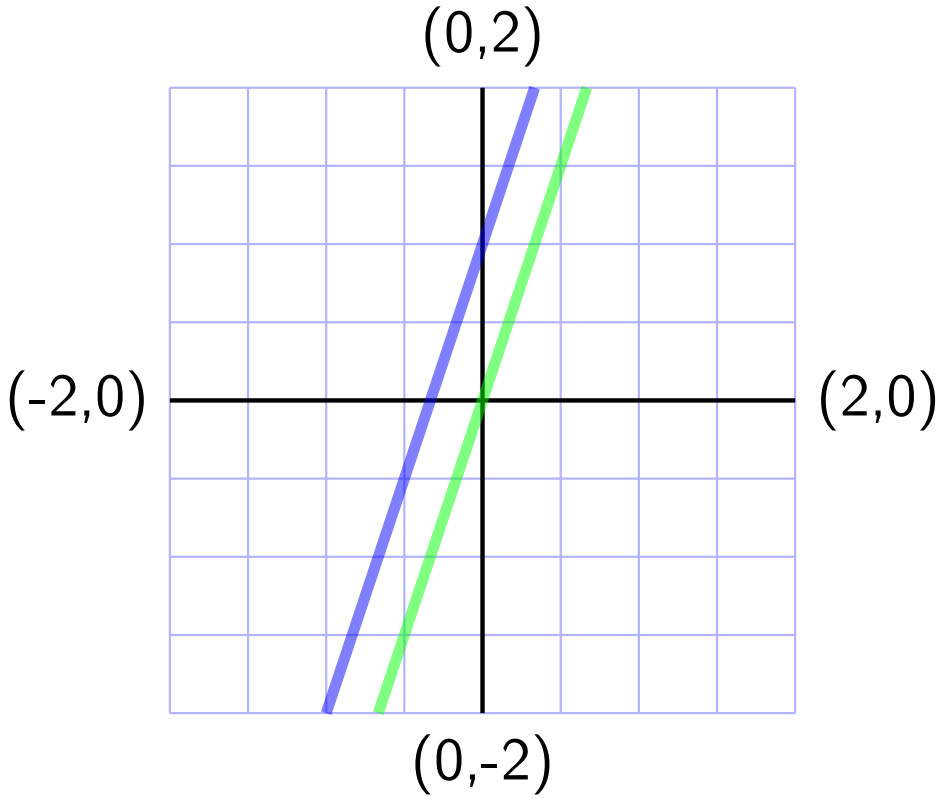
$y = 3x$, $y = 3x + 1$, $y = -\frac{1}{3}x - 1$.



Prerequisite Topics: Parallel and Perpendicular Example

The example below shows parallel and perpendicular lines.

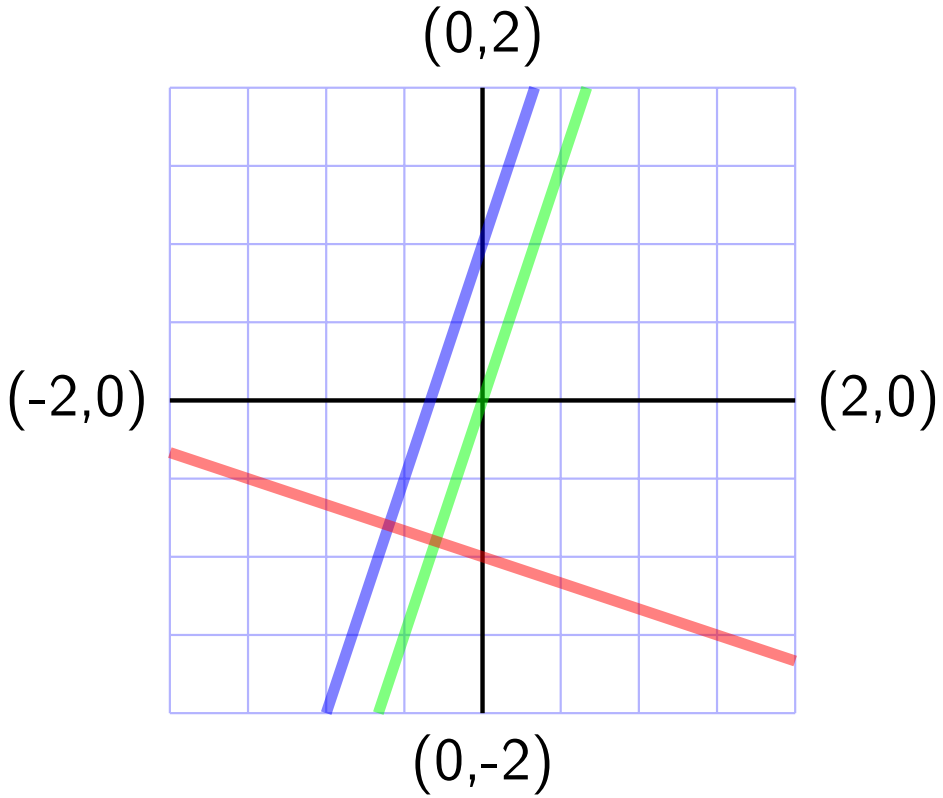
$y = 3x$, $y = 3x + 1$, $y = -\frac{1}{3}x - 1$.



Prerequisite Topics: Parallel and Perpendicular Example

The example below shows parallel and perpendicular lines.

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



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

Please sign and return the syllabus agreement. You have no official homework on Chapter 1, but you may receive 6 points towards your final homework grade if you complete all even Chapter 1 Review Exercises (pgs. 47-8). This must be turned in by September 10.

You are expected to review much of this material on your own.