Department of Mathematics & Statistics
Concordia University

MATH 201
Elementary Functions
Summer 2019

Instructor*: _____

Office/Tel No.: _____

Office Hours: _____

*Students should get the above information from their instructor during class time. The instructor is the person to contact should there be any questions about the course.

Textbook: *Precalculus Esentials*, by J. Ratti and M. McWaters; Pearson Education.

Office Hours: Your professor will announce her/his office hours during which she/he also will be available to give a reasonable amount of help. However, if you missed a class it is not reasonable to expect your professor to cover the missed material for you.

Tutorials: The material in this course requires a lot of practice. There is not enough class time to do all the examples and problems needed to learn the material thoroughly. The Department has therefore organized special ***Tutorials*** conducted once per week for one hour for every section of this course to provide additional support to students outside the lecture room environment. Tutorials are conducted by senior students who will help with solving problems on the topics learned in class that week, with particular emphasis on the material that students may have difficulties with in this course. Students are strongly encouraged to participate and be active at these problem-solving sessions which represent an important new resource to help you succeed in this course.

Math Help Centre: In addition to Tutorial sessions, a Math Help Centre staffed by graduate students is available. The schedule of its hours of operation and its location will be posted in the Department.

WeBWorK: Every student will be given access to an online system called **WeBWorK**. The system provides you with many exercises and practice problems. Students will use this system to do online assignments (see **Assignments** below). In addition, before the midterm test and before the end of the course, a number of practice problems will be posted in WeBWorK to help you review the material.

Assignments: Students are expected to submit assignments online using **WeBWorK**. Late assignments ***will not*** be accepted. WeBWorK assignments contribute 10% to your final grade (see the **Grading Scheme** below). Working regularly on the

assignments is essential for success in this course. Students are also strongly encouraged to do as many problems on their own as their time permits from the list of recommended problems included in this outline as well as the practice problems in WeBWorK mentioned above.

Midterm Test: There will be one **midterm test** in Week 4 (based on the material of weeks 1-3) which will contribute up to 25% to your final grade (see the Grading Scheme below).
NOTE: It is the Department's policy that tests missed for any reason, ***including illness,*** cannot be made up. If you miss both the midterm and alternate test because of illness ***(to be confirmed by a valid medical note)*** the final exam can count for 90% of your final grade, and the remaining 10% will be determined by the WeBWorK assignments.

Final Exam: The final examination will be three hours long and will cover all the material in the course.
NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Any conflict or problems with the scheduling of the final exam must be reported to the Examinations Office, ***not*** *to* your instructor. It's the Department's policy and the Examinations Office's policy that ***students are to be available until the end of the final examinations period***. Conflicts due to travel plans will ***not*** be accommodated.

Grading Scheme: The final grade will be based, in all cases, on the ***higher*** of the two options:

a) 10% for the assignments,
25% for the midterm test,
65% for the final exam.

b) 10% for the assignments,
10% for the midterm test,
80% for the final exam.

IMPORTANT: **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE**.
The term work contributes at least 20% to the final grade. Therefore active participation in classes and continuous work on the course material ***during*** the semester is essential for success in this course. Also, note that although class attendance is not mandatory, years of experience have shown that students who do not attend classes and believe they can keep up with the material on their own do poorly on the final examination.

Calculators: Only calculators approved by the Department (with a sticker attached as a proof of approval), such as **Sharp EL 531** or the **Casio FX 300MS**, available at the Concordia Bookstore, are permitted for the class test and final examination. For the list of Approved calculators see www.concordia.ca/artsci/math-stats/services.html

CONTENTS

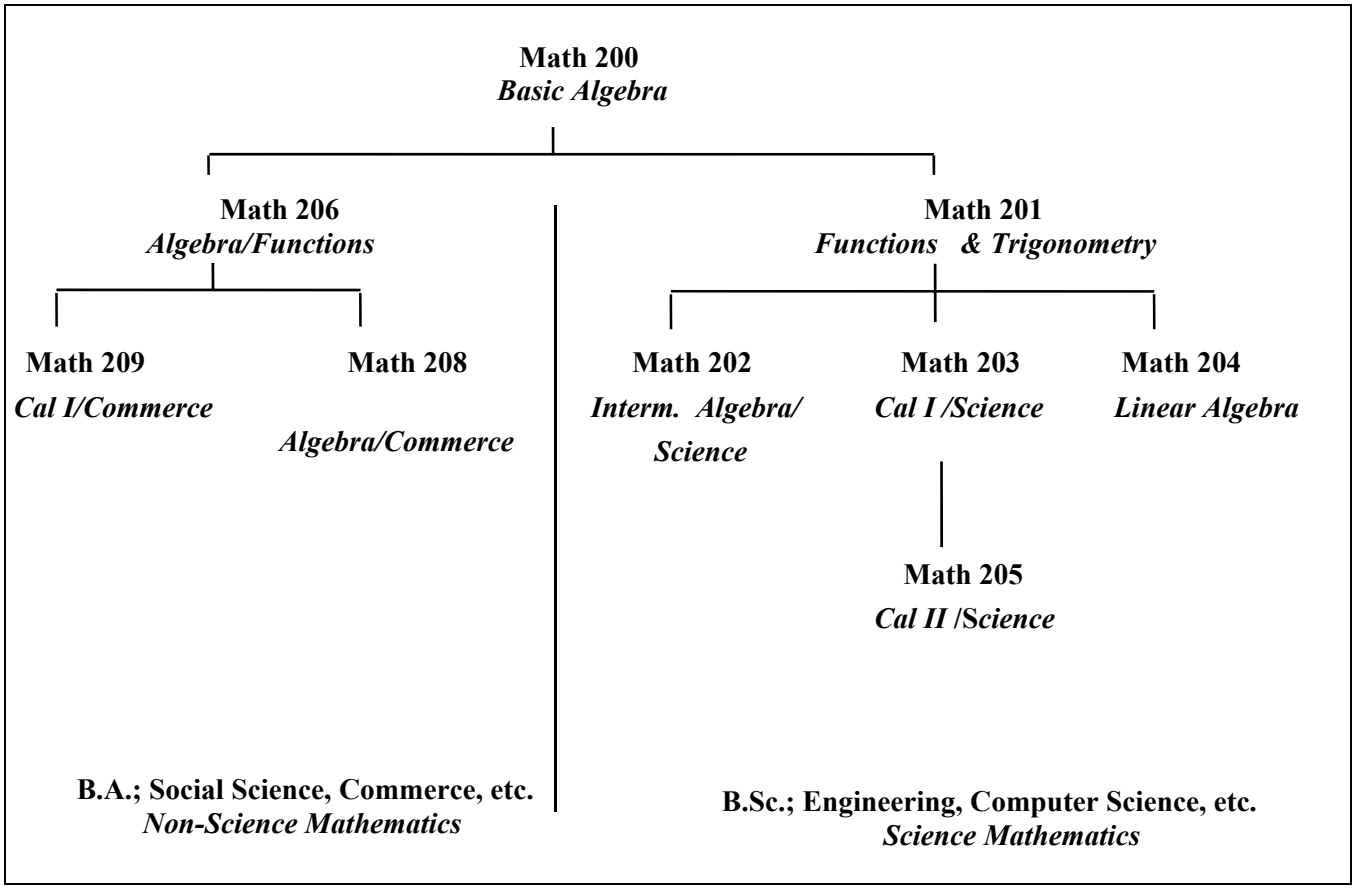
Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." *[Undergraduate Calendar, Sec 17.10.2]*

Choosing Between Math 200 and Math 201

If the last math course you took was at the high school level (Quebec), and more than five years have passed since, you should probably register for Math 200. If you are still unsure of your level, read on.

Math Courses at Concordia



A self-administered test to help you decide between Math 200 and Math 201 follows. Give yourself about 30 minutes to complete the test. Be honest with yourself, since registering in the wrong course may cost you money and result in a poor grade. Remember that all university-level courses usually demand quite a bit of your time. Students in Math 201 will find they will not have time once the course begins to review material that they are expected to know before they enter the course.

Help: The Math Department runs a drop-in **Math Help Centre** in **LB 912** - call the Department's office for further information at 848-2424, Ext. 3222/3223. Counseling and Development runs math skills workshops, 2 or 3 times a week - call the Counseling and Development's office for further information at 848-2424, Ext. 3545/3555.

Scoring: 15 or less = Math 200; 16-21 = see an advisor; 22 or better = Math 201.

MATH 201
Qualifying Test

Part One

1) The sum of $3x^2 + x - 7$ and $x^2 + 10$ can be expressed as

a) $4x^2 + x - 3$ b) $3x^2 + x + 3$ c) $4x^4 + x - 3$ d) $4x^2 + x + 3$

2) The product of $(-3xy^2)(5x^2y^3)$ is:

a) $-8x^3y^5$ b) $-15x^3y^5$ c) $-15x^2y^5$ d) $-15x^3y^6$

3) Expressed as a single fraction in lowest terms, the sum of $\frac{3x}{4}$ and $\frac{2x}{3}$ is equivalent to:

a) $\frac{5x}{7}$ b) $\frac{5x}{12}$ c) $\frac{17x}{7}$ d) $\frac{17x}{12}$

4) If $15x^6y$ is divided by $-3x^3$, the quotient is:

a) $-5x^2$ b) $-5x^3y$ c) $5x^2$ d) $5x^3y$

5) Written in factored form, the binomial $a^2b - ab^2$ is equivalent to:

a) $ab\,(a - b)$ b) $(a - b)\,(a + b)$ c) $a^2(b - b^2)$ d) $a^2b^2(b - a)$

6) The solution set for $2x^2 - 7x - 4 = 0$ is:

a) $\{2, 1\}$ b) $\{-\frac{1}{2}, 4\}$ c) $\{-2, 1\}$ d) $\{\frac{1}{2}, -4\}$

7) What is the solution for the following system of equations?
$2x + y = 7$
$x - 2y = 6$

a) $\{3, 1\}$ b) $\{1, 3\}$ c) $\{-1, 4\}$ d) $\{4, -1\}$

8) The sum of $\sqrt{12}$ and $5\sqrt{3}$ is:

a) $10\sqrt{3}$ b) $7\sqrt{6}$ c) $7\sqrt{3}$ d) 360

9) The graph of the line passing through the points (6, 7) and (4, 2) has a slope of:

a) $\frac{2}{5}$ b) $-\frac{5}{2}$ c) $\frac{5}{2}$ d) $-\frac{1}{2}$

10) The graph of the equation $y = 3$ is a line:

a) parallel to the x-axis
b) parallel to the y axis
c) passing through the points (6, 7)
d) passing through the point (3, 0)

11) Which equation represents a line whose slope is $\frac{1}{2}$ and whose y-intercept is 3?

a) $y=\frac{1}{2}x-3$ b) $y=-\frac{1}{2}x+3$ c) $y=3x+\frac{1}{2}$ d) $y=\frac{1}{2}x+3$

12) The inequality $3x + 2 > x + 8$ is equivalent to:

a) $x > -\frac{3}{2}$ b) $x > \frac{3}{2}$ c) $x > 3$ d) $x < 3$

13) The smallest whole number that satisfies the inequality $3x - 1 > 2$ is:

a) 1 b) 2 c) 3 d) 0

14) If x is an integer, what is the solution set of $3 < x \leq 6$?

a) {3, 4 , 5} b) {4, 5, 6} c) {3, 4, 5, 6} d) {4, 5}

15) The lengths of sides of a triangle are 8, 15, and 17. If the longest side of a similar triangle is 51, what is the length of the shortest side?

a) 32 b) 24 c) 16 d) 4

16. If two legs of a right triangle are 5 and 12, the hypotenuse is:

a) $\sqrt{119}$ b) $\sqrt{17}$ c) 17 d) 13

17) What is the circumference of a circle whose radius is 6?

a) 6π b) 12π c) 36π d) 3π

18) Maria is twice as old as Sue. If x represents Sue's age, which expression represents how old Maria will be in three years?

a) $2x$ b) $x + 3$ c) $\frac{1}{2}x - 3$ d) $2x + 3$

Part Two

1) Simplify: $(2w^3 - 5w - 15) - (-6w^2 + w - 15) + (4w^2 - 7)$

2) Evaluate: $-r - [-p - (-n + r)]$ for $n = -3$, $p = 4$ and $r = -1$

3) Simplify: $\dfrac{1}{3^{-1} - 4^{-1}}$

4) Perform the indicated operations: $-\dfrac{1}{6} + \dfrac{11}{14}$

5) Factor completely: $3x^2 - 15x - 42$

6) Perform the indicated operations and express in simplest form: $\dfrac{x^2 - 16}{x^2 - x - 20} \bullet \dfrac{1}{x - 4}$

7) Perform the indicated operations: $3\sqrt{96} + 6\sqrt{54} - 2\sqrt{150}$

8) Express $\dfrac{3}{\sqrt{5}+1}$ as an equivalent fraction with a rational denominator.

9) Solve: $-14 - 6a < -74$

10) Find a positive number whose square is 12 more than the number itself.

11) Solve $\begin{aligned} x + 5 &= 3y - 2 \\ 2x + 7 &= y + 3 \end{aligned}$

12) In a class of 24 students, 25% of them failed a test. How many students failed the test?

ANSWERS

Part One:
1. d); 2. b); 3. d): 4. b): 5. a); 6. b); 7. d); 8. c); 9. c); 10. a); 11. d); 12. c); 13. b); 14. b); 15. b): 16. d); 17. b); 18. d)

Part Two:
1. $2w^3 + 10w^2 - 6w - 15 - 7$; 2. 7; 3. 12; 4. $\dfrac{13}{21}$: 5. $3(x - 7)(x + 2)$; 6. $\dfrac{1}{x-5}$; 7. $20\sqrt{6}$; 8. $\dfrac{3(\sqrt{5}-1)}{4}$; 9. a > 10; 10. 4;
11. (–1;2); 12. 6.