

# Final Examination Syllabus

## Math 104/184 Term I, 2006–2007

The final exam syllabus, and much more, can also be found on the Math 104/184 web page

<http://www.math.ubc.ca/~kliu/104-184/>

There are mild differences in *course* syllabus from section to section. But all sections use the textbook *Calculus: Ideas and Applications*, by Alex Himonas and Alan Howard (John Wiley and Sons). Please note that the Solutions Manual is *not* required and may be harmful to your health.

It is strongly suggested that all students read the sections indicated below, and solve the listed problems. Some are routine practice problems, and you may skip a problem if you are *certain* you can solve it. The book has many worked examples, covering most "types" of problems.

The problems on the *final exam* will use ideas and techniques from problems in this list.

Chapter 0 Please read the chapter—the contents will be more or less familiar. Some notions that we will see later (and in Math 105), such as *cost*, *revenue*, *profit*, *demand curve*, *supply curve*, *equilibrium point* are introduced here.

Please solve problems 25, 27, 29, and 33 of Section 0.4 and problems 19, 21, 22, and 23 of Section 0.5.

Chapter 1 In a number of sections of Math 104, the contents of 1.1 will be done in the process of defining the derivative, while the contents of the rest of Chapter 1 will be done later as part of curve sketching.

1.1 solve 1, 5, 9, 15, 21, 25, 29, 31, 35, 37, 41, 43, 49, 51, 57, 59

1.2 solve 13, 15, 17, 19, 25, 29, 35, 41, 45, 67

1.3 solve 13, 15, 17, 19, 21, 25, 23, 29, 33

Chapter 2 Some of this was done in high school, but in view of the importance of the exponential and logarithmic functions, it is important to revisit it. Some sections of Math 104 will do much of the content of Chapter 2 in connection with 3.5 (Derivative of Logarithms and Exponentials).

- 2.1 solve 15, 17, 21, 23, 27, 29, 33, 35
- 2.2 solve 3, 7, 11, 13, 15, 17, 19
- 2.3 solve 1, 3, 7, 9, 11, 13, 17, 37, 39, 41, 43, 45
- 2.4 solve 1, 5, 9, 11, 13, 15, 23, 25, 27, 29, 31, 33, 35, 37, 39, 67, 69, 71, 73, 74, 79

### Chapter 3

- 3.1 solve 13, 15, 19, 21, 23, 25, 29, 33; note that the derivatives in this section are to be found by using the *definition* of the derivative as a certain limit, *not* by using “differentiation formulas”
  - 3.2 solve 1, 3, 4, 5, 9, 11, 17, 23, 24, 25, 27, 29, 33, 37, 47, 49, 51, 53, 55
  - 3.3 solve 1, 3, 5, 11, 12, 13, 37, 38, 39, 41, 43, 45
  - 3.4 solve 1, 3, 7, 15, 17, 21, 23, 25, 27, 39, 45
  - 3.5 solve 1, 5, 9, 11, 13, 17, 19, 29, 34, 39, 41, 43, 45, 47, 55, 57, 61, 65
  - 3.6 solve 5, 7, 9, 11, 15, 17, 18, 21, 23, 27, 29, 30, 31, 32
  - 3.7 solve 1, 3, 5, 9, 11, 13, 17, 19, 21, 29, 33, 34, 35, 37, 43, 45, 47, 49
  - 3.8 solve 1, 5, 7, 9, 11, 13, 17, 19, 21, 25, 27, 29, 31
- end of Chapter 3, solve review problems 39, 41, 43, 49, 65, 67, 69, 75
- end of Chapter 3, projects, Newton-Raphson method. Solve problems 1, 3, 4, 12 in the course notes on the method (see course web page).

### Chapter 4

- 4.1 solve 3, 5, 9, 11, 13, 17, 19, 23, 25, 33, 35, 37, 39, 53, 55, 59, 61
- 4.2 solve 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 35, 37, 39, 45, 47, 58, 59
- 4.3 solve 1, 3, 5, 7, 11, 15, 19, 23, 25, 29, 31
- 4.4 solve 1, 5, 7, 15, 19, 21, 31, 32
- 4.5 solve 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 25, 27, 28, 30

end of Chapter 4, solve review problems 52, 53

end of Chapter 4 projects, Elasticity of Demand

Chapter 8 Read Sections 8.1, 8.2 (review of high school material on trigonometric functions).

8.1 solve 1, 7, 11, 17, 19, 23, 25, 27

8.2 solve 1, 3, 11, 13, 22, 23, 24, 25

8.3 solve 3, 5, 9, 11, 13, 15, 17, 21, 23, 25, 27, 29, 31, 35(b), 41, 43, 49, 53

Know how to find the derivatives of the inverse trigonometric functions  $\sin^{-1} x$  and  $\tan^{-1} x$ ; solve problems 4, 5, 7, 8, 9, 10, 11 of the course notes on inverse trigonometric functions (see course web page).

Chapter 10

10.1 solve 5, 9, 11, 12, 13, 15, 17, 21, 23, 27, 45, 47

10.2 solve 1, 3, 5, 7, 15, 17, 21, 23, 25, 27, 35