

MATH 2072 EXAM 1 REVIEW

★ Bring a calculator and something to write with.

Section 6.1 Integration by parts was introduced in this section. Be familiar with the examples that were covered in class. In particular, some examples used integration by parts more than once, some used integration by parts along with the substitution rule, and others required that the resulting equation be solved for the desired integral.

Section 6.2 Be able to evaluate integrals of the forms

$$\int \sin^m x \cos^n x dx, \quad \int \tan^m x \sec^n x dx, \quad \int \cot^m x \csc^n x dx.$$

All trigonometric identities will be given to you, you just need to be able to apply them correctly. Trigonometric substitution was also covered in this section. Such integrals include expressions of the form $\sqrt{a^2 - x^2}$, $\sqrt{a^2 + x^2}$, or $\sqrt{x^2 - a^2}$. Before using trigonometric substitution, always see if regular substitution would work first.

Section 6.3 In this section, we described methods for integrating rational functions. If a rational function is improper, first apply the division algorithm to express it in terms of its quotient and a proper rational function. A proper rational function can be integrated after being expanded as partial fractions. We also looked at the case where an integrand contains a radical and can be rationalized.

Section 6.5 Be able to approximate definite integrals using the Midpoint Rule, Trapezoidal Rule, and Simpson's Rule.

Other In addition to the topics listed on the front of this page, you should be able to evaluate limits, derivatives, and integrals like those covered in Calculus I. This includes, but is not limited to, the Fundamental Theorem of Calculus and the Substitution Rule. You should be able to work problems similar to the examples covered in class and the assigned homework problems listed on the back of this page.

ASSIGNED HOMEWORK PROBLEMS

Section 6.1 # 3-6, 9, 13, 17, 25, 29, 30

Section 6.2 # 1, 3, 5, 13, 17, 21, 23, 29, 31, 33, 41, 45, 47, 51, 59, 61

Section 6.3 # 1, 3, 5, 7, 9, 13, 15, 19, 21, 25, 35, 39, 41

Section 6.5 # 5, 7, 11