

Exam II Review

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Please know the following for the exam Thursday, April 16.

1. **Be able to do all problems from the quizzes and homework.**
2. Derivatives
 - a. Know the chain rule, product rule and quotient rule.
 - b. Know the derivative of common functions including e^x , $\ln x$, $\sin x$, $\cos x$, $\tan x$, $\arcsin x$, $\arccos x$ and $\arctan x$.
3. Integrals
 - a. Know integration techniques of u substitution, integration by parts and partial fractions decomposition.
 - b. Know $\int e^x dx$, $\int \ln x dx$, $\int \sin x dx$, $\int \arcsin x dx$, $\int \cos x dx$, $\int \arccos x dx$, $\int \tan x dx$, $\int (1/\sin x)dx$, $\int (1/\cos x)dx$, $\int \arctan x dx$ and $\int (1/(1+x^2))dx$.
4. Be able to state Part I and Part II of the Fundamental Theorem of Calculus.
5. Taylor's Theorem
 - a. Be able to state Taylor's Theorem as given in Theorem 7.6 on page 279 and Lagrange's form of the remainder given on page 283.
 - b. Use Taylor's Theorem to approximate as in problems 4 and 5 on page 285.
 - c. Be able to define o -notation as on page 286.
 - d. Be able to state the Taylor series on page 287 using o -notation.
 - e. Use o -notation to evaluate limits as in Section 7.13.
6. Be able to prove Theorem 7.11 on page 301 of the book.
7. Differential Equations
 - a. Know how to solve linear, separable and homogeneous first order ordinary differential equations from sections 8.5, 8.24 and 8.26.
 - b. Know story problems 4, 8 and 9 on pages 321–322.
8. Complex Numbers
 - a. Know how to add, subtract, multiply and divide complex numbers.