Math 12 - Study Guide for Final Exam

Exponential and Log Function

Know how to use properties of $e^x$ and $\ln x$
Know how to find derivatives of functions involving $e^x$ and $\ln x$
Know how to find integrals yielding $e^x$ and $\ln x$

Inverse Trig Functions

Know how to evaluate $\sin^{-1} x$ and $\tan^{-1} x$
Know how to find derivatives of functions involving $\sin^{-1} x$ and $\tan^{-1} x$
Know how to find integrals yielding $\sin^{-1} x$ and $\tan^{-1} x$

Definite Integrals

Know how to compute area or $\int_a^b f(x)dx$ (as a limit of a sum)
Know how to state and use the Fundamental Theorem of Calculus

Indefinite Integrals/Techniques of Integration

Know how to recognize and use the rules, $u$-substitution, integration by parts, powers of $\sin/\cos$, powers of $\sec/\tang$, trig substitution, and partial fractions

Applications of Definite Integrals

Know how to compute the area between curves
Know how to find the volume of a solid of revolution by disks/washers and shells
Know how to use a definite integral to find the work
Know how to solve separable differential equations and do growth/decay problems

Improper Integrals

Know how to evaluate $\int_a^\infty f(x)dx$, $\int_{-\infty}^b f(x)dx$, and $\int_{-\infty}^\infty f(x)dx$
Know how to evaluate $\int_a^b f(x)dx$ when $f$ has an infinite discontinuity on $(a, b)$

Remarks

Study class Practice Integrals, Practice Final, notes, homework, quizzes, and tests.
The summation formulas and trig identities will be on the board during the exam.