

**INTEGRAL CHEAT SHEET V2 (1220-5 CALCULUS II,
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You will be allowed to use this page for reference in the midterm and the final exam. All integrals listed here can be used without justification.

(1) $\int x^r dx = \begin{cases} \frac{x^{r+1}}{r+1} + C & \text{if } r \neq -1 \\ \ln x + C & \text{if } r = -1 \end{cases}$	(8) $\int \tan x dx = -\ln \cos x + C$
(2) $\int e^x dx = e^x + C$	(9) $\int \cot x dx = \ln \sin x + C$
(3) For $a > 0, a \neq 1$: $\int a^x dx = \frac{a^x}{\ln a} + C$	(10) $\int \sinh x dx = \cosh x + C$
(4) $\int \sin x dx = -\cos x + C$	(11) $\int \cosh x dx = \sinh x + C$
(5) $\int \cos x dx = \sin x + C$	(12) $\int \frac{1}{\sqrt{a^2 - x^2}} dx = \sin^{-1} \frac{x}{a} + C$
(6) $\int (\sec x)^2 dx = \int \frac{1}{(\cos x)^2} dx = \tan x + C$	(13) $\int \frac{1}{\sqrt{x^2 + a^2}} dx = \sinh^{-1} \frac{x}{a} + C$
(7) $\int (\csc x)^2 dx = \int \frac{1}{(\sin x)^2} dx = -\cot x + C$	(14) $\int \frac{1}{\sqrt{x^2 - a^2}} dx = \cosh^{-1} \frac{x}{a} + C$
	(15) $\int \frac{1}{x^2 + a^2} dx = \frac{1}{a} \tan^{-1} \frac{x}{a} + C$