

## Integrals

You are expected to have the following facts memorized.

1.  $\int x^n dx = \frac{x^{n+1}}{n+1} + C, (n \neq -1)$

2.  $\int \frac{1}{x} dx = \ln|x| + C$

3.  $\int e^x dx = e^x + C$

4.  $\int a^x dx = a^x \frac{1}{\ln a} + C$

5.  $\int \sin x dx = -\cos x + C,$

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6.  $\int \tan x dx = \ln|\sec x| + C,$

$$\int \cot x dx = -\ln|\csc x| + C$$

7.  $\int \sec x dx = \ln|\sec x + \tan x| + C,$

$$\int \csc x dx = -\ln|\csc x + \cot x| + C$$

8.  $\int \sec^2 x dx = \tan x + C,$

$$\int \csc^2 x dx = -\cot x + C$$

9.  $\int \sec x \tan x dx = \sec x + C,$

$$\int \csc x \cot x dx = -\csc x + C$$

10.  $\int \frac{1}{\sqrt{1-x^2}} dx = \sin^{-1} x + C$

11.  $\int \frac{1}{1+x^2} dx = \tan^{-1} x + C$

12.  $\int \frac{1}{a^2+x^2} dx = \frac{1}{a} \tan^{-1} \frac{x}{a} + C$

13.  $\int \frac{1}{|x|\sqrt{x^2-1}} dx = \sec^{-1} x + C$

14.  $\int \sinh x dx = \cosh x + C,$

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