

Common Integral List

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Here is a list of the integrals of common functions that may be of use. Note that there is a much larger list contained in the back of the textbook, but all of the integrals in that list can be obtained from the following integrals along with the common techniques of integration (that is, it is a lot easier to remember the following list and use those techniques than to memorize 111 integrals). In fact, many of the integrals on this list may be derived from other yet we will include them for convenience.

1)	$\int x^n dx = \frac{1}{n+1}x^{n+1} + C$ for $n \neq -1$
2)	$\int \frac{1}{x} dx = \ln(x) + C$
3)	$\int e^x dx = e^x + C$
4)	$\int a^x dx = \frac{a^x}{\ln(a)} + C$ for $a > 0$
5)	$\int \ln(x) dx = x \ln(x) - x + C$
6)	$\int \sin(x) dx = -\cos(x) + C$
7)	$\int \cos(x) dx = \sin(x) + C$
8)	$\int \sec^2(x) dx = \tan(x) + C$
9)	$\int \sec(x) \tan(x) dx = \sec(x) + C$
10)	$\int \csc(x) \cot(x) dx = -\csc(x) + C$
11)	$\int \csc^2(x) dx = -\cot(x) + C$
12)	$\int \cot(x) dx = \ln(\sin(x)) + C$
13)	$\int \tan(x) dx = \ln(\sec(x)) + C$
14)	$\int \sec(x) dx = \ln(\sec(x) + \tan(x)) + C$
15)	$\int \csc(x) dx = \ln(\csc(x) - \cot(x)) + C$
16)	$\int \tan^2(x) dx = \tan(x) - x + C$
17)	$\int \cot^2(x) dx = -\cot(x) - x + C$
18)	$\int \sin^n(x) \cos(x) dx = \frac{1}{n+1} \sin^{n+1}(x) + C$ for $n \neq -1$
19)	$\int \cos^n(x) \sin(x) dx = -\frac{1}{n+1} \cos^{n+1}(x) + C$ for $n \neq -1$
20)	$\int \tan^n(x) \sec^2(x) dx = \frac{1}{n+1} \tan^{n+1}(x) + C$ for $n \neq -1$
21)	$\int \sec^n(x) \tan(x) dx = \frac{1}{n} \sec^{n+1}(x) + C$ for $n \neq 0$
22)	$\int \cot^n(x) \csc(x) dx = -\frac{1}{n} \cot^{n+1}(x) + C$ for $n \neq 0$
23)	$\int \csc^n(x) \cot(x) dx = -\frac{1}{n} \csc^{n+1}(x) + C$ for $n \neq 0$
24)	$\int \sec^3(x) dx = \frac{1}{2} (\sec(x) \tan(x) + \ln(\sec(x) + \tan(x))) + C$
25)	$\int \csc^3(x) dx = \frac{1}{2} (-\csc(x) \cot(x) + \ln(\csc(x) - \cot(x))) + C$
26)	$\int \frac{1}{\sqrt{1-x^2}} dx = \sin^{-1}(x) + C$
27)	$\int \frac{-1}{\sqrt{1-x^2}} dx = \cos^{-1}(x) + C$
28)	$\int \frac{1}{1+x^2} dx = \tan^{-1}(x) + C$
29)	$\int \frac{-1}{1+x^2} dx = \cot^{-1}(x) + C$
30)	$\int \frac{1}{x\sqrt{x^2-1}} dx = \sec^{-1}(x) + C$
31)	$\int \frac{-1}{x\sqrt{x^2-1}} dx = \csc^{-1}(x) + C$
32)	$\int \frac{1}{k^2+x^2} dx = \frac{1}{k} \tan^{-1}\left(\frac{x}{k}\right) + C$ for $k \neq 0$
33)	$\int \frac{1}{\sqrt{k^2-x^2}} dx = \sin^{-1}\left(\frac{x}{k}\right) + C$ for $k \neq 0$