

## §8.1 - Integration formulas

Use the big list of formulas for U-sub.

1.  $\int k \, dx = kx + c$
2.  $\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$
3.  $\int \frac{dx}{x} = \ln |x| + c$
4.  $\int e^x \, dx = e^x + c$
5.  $\int a^x \, dx = \frac{a^x}{\ln a} + c \, (a > 0, a \neq 1)$
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.  $\int \csc^2 x \, dx = -\cot x + c$
10.  $\int \sec x \tan x \, dx = \sec x + c$

## §8.2 - Integration by parts

Use the following formula. In this case,  $u$  is a function that is easy to take the derivative of, and  $dv$  is a function that is easy to integrate. Remember to always include  $dx$  in your  $dv$ .

$$\int u \, dv = uv - \int v \, du$$

## §8.3 - Trigonometric integrals

Use the following process for evaluating products of powers of  $\sin$  and  $\cos$ . The process is similar for powers of  $\tan$  and  $\sec$ , except that you will always choose  $\tan$  to be your substitution.

## §8.4 - Trigonometric substitutions

## §8.5 - Partial fractions

## §8.8 - Improper integrals