# Table of Antidifferentiation Formulas

## General antiderivatives
1. \( \int dx = x + C \)
2. \( \int af(x) \, dx = a \int f(x) \, dx \)
3. \( \int x^n \, dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1 \)
4. \( \int x^n \, dx = \ln|x| + C, \quad n = -1 \)
5. \( \int a^n \, dx = \frac{a^n}{\ln a} + C \)
6. \( \int e^n \, dx = e^n + C \)

## Antidifferentiation formulas of trigonometric functions
7. \( \int \sin x \, dx = -\cos x + C \)
8. \( \int \cos x \, dx = \sin x + C \)
9. \( \int \sec^2 x \, dx = \tan x + C \)
10. \( \int \csc^2 x \, dx = -\cot x + C \)
11. \( \int \sec x \tan x \, dx = \sec x + C \)
12. \( \int \csc x \cot x \, dx = -\csc x + C \)
13. \( \int \cot x \, dx = \ln|\sin x| + C \)
14. \( \int \tan x \, dx = \ln|\sec x| + C \)
15. \( \int \sec x \, dx = \ln|\sec x + \tan x| + C \)
16. \( \int \csc x \, dx = \ln|\csc x - \cot x| + C \)

## Antidifferentiation formulas yielding inverse trigonometric functions
17. \( \int \frac{1}{\sqrt{a^2 - x^2}} \, dx = \sin^{-1} \left( \frac{x}{a} \right) + C, \quad a > 0 \)
18. \( \int \frac{1}{a^2 + x^2} \, dx = \frac{1}{a} \tan^{-1} \left( \frac{x}{a} \right) + C, \quad a \neq 0 \)
19. \( \int \frac{1}{x\sqrt{x^2 - a^2}} \, dx = \frac{1}{a} \sec^{-1} \left( \frac{x}{a} \right) + C, \quad a > 0 \)

## Antidifferentiation formulas of hyperbolic functions
20. \( \int \sinh x \, dx = \cosh x + C \)
21. \( \int \cosh x \, dx = \sinh x + C \)
22. \( \int \sech^2 x \, dx = \tanh x + C \)
23. \( \int \csch^2 x \, dx = -\coth x + C \)
24. \( \int \sech x \tanh x \, dx = -\sech x + C \)
25. \( \int \csch x \coth x \, dx = -\csch x + C \)
26. \( \int \coth x \, dx = \ln|\sinh x| + C \)
27. \( \int \tanh x \, dx = \ln(\cosh x) + C \)
28. \( \int \sech x \, dx = 2 \tan^{-1} e^x + C = \tan^{-1}(\sinh x) + C \)
29. \( \int \csch x \, dx = \ln|\csch x - \coth x| + C \)