

Some Important Indefinite Integrals (Section 5.3)

1. $\int 0 \, dx = c$ where c is an arbitrary constant

2. $\int k \, dx = kx + c$

3. **Power Rule:** $\int x^n \, dx = \frac{x^{n+1}}{n+1} + c$, where $n \neq -1$

4. $\int \frac{1}{x} \, dx = \ln |x| + c$

5. $\int e^x \, dx = e^x + c$

6. $\int a^x \, dx = \frac{a^x}{\ln a} + c$ for any real number $a > 0$

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

14. $\int \frac{1}{\sqrt{1-x^2}} \, dx = \sin^{-1} x + c$

15. $\int -\frac{1}{\sqrt{1-x^2}} \, dx = \cos^{-1} x + c$

Note: To check any of these formulae, the derivative of the function on the right-hand side should be equal to the function being integrated (the integrand).