Calculus : Integrals

Indefinite Integration

Name KEY

Date _____ Period _____

	Original Integral	Rewrite	Integrate	Simplify
1.	$\int \frac{1}{x^3} dx$	$\int x^{-3} dx$	$\frac{x^{-2}}{-2} + c$	$-\frac{1}{2x^2} + c$
2.	$\int \sqrt{x} dx$	$\int x^{\frac{1}{2}} dx$	$\frac{x^{3/2}}{3/2} + C$	$\frac{2}{3} x^{3/2} + C$
3.	$\int \frac{1}{x^2} dx$	$\int x^{-2} dx$	$\frac{x^{-1}}{-1} + C$	$\frac{-1}{x} + C$
4.	$\int \sqrt[3]{x} dx$	$\int x^{1/3} dx$	$\frac{x^{4/3}}{4/3} + C$	$\frac{3}{4} x^{4/3} + C$
5.	$\int 2\sin x dx$	$2\int \sin x dx$	$-2\cos x + C$	$-2\cos x + C$
6.	$\int (x+2) dx$	$\int x + \int 2$	$\frac{1}{2}x^2 + 2x + C$	$\frac{1}{2}x^2 + 2x + C$
7.	$\int \frac{1}{x\sqrt{x}} dx$	$\int x^{-3/2} dx$	$\frac{x^{-1/2}}{-1/2} + C$	$\frac{-2}{\sqrt{x}} + C$
8.	$\int x(x^2+3) dx$	$\int x^3 dx + 3\int x dx$	$\frac{x^4}{4} + \frac{3x^2}{2} + C$	$\frac{1}{4}x^4 + \frac{3}{2}x^2 + C$
9.	$\int \frac{1}{2x^3} dx$	$\frac{1}{2}\int x^{-3} dx$	$\frac{1}{2} \cdot \frac{x^{-2}}{-2} + C$	$-\frac{1}{4x^2} + C$
10.	$\int \frac{1}{(2x)^3} dx$	$\int \frac{1}{8x^3} dx = \frac{1}{8}\int x^{-3} dx$	$\frac{1}{8} \cdot \frac{x^{-2}}{-2} + C$	$-\frac{1}{16x^2} + C$
11.	$\int x^2\sqrt{x} dx$	$\int x^{5/2} dx$	$\frac{x^{7/2}}{7/2} + C$	$\frac{2}{7} x^{7/2} + C$
12.	$\int (x+3)(3x-2) dx$	$\int 3x^2 dx + \int 7x dx + \int -6 dx$	$\frac{3x^3}{3} + \frac{7x^2}{2} - 6x + C$	$x^3 + \frac{7}{2}x^2 - 6x + C$
13.	$\int \frac{\sin x}{\cos^2 x} dx$	$\int \tan x \sec x dx$	$\sec x + C$	$\sec x + C$
14.	$\int \frac{x+1}{\sqrt{x}} dx$	$\int x^{1/2} dx + \int x^{-1/2} dx$	$\frac{x^{3/2}}{3/2} + \frac{x^{1/2}}{1/2} + C$	$\frac{2}{3}x^{3/2} + 2x^{1/2} + C$
15.	$\int \frac{x^2+x+1}{\sqrt{x}} dx$	$\int x^{3/2} dx + \int x^{1/2} dx + \int x^{-1/2} dx$	$\frac{2x^{5/2}}{5} + \frac{2x^{3/2}}{3} + 2x^{1/2} + C$	same