

Math 229 Integration Worksheet – Substitution Method

Integrate

1.  $\int (5x + 4)^5 dx$
2.  $\int 3t^2(t^3 + 4)^5 dt$
3.  $\int \sqrt{4x - 5} dx$
4.  $\int t^2(t^3 + 4)^{-1/2} dt$
5.  $\int \cos(2x + 1) dx$
6.  $\int \sin^{10} x \cos x dx$
7.  $\int \frac{\sin x}{(\cos x)^5} dx$
8.  $\int \frac{(\sqrt{x} - 1)^2}{\sqrt{x}} dx$
9.  $\int \sqrt{x^3 + x^2}(3x^2 + 2x) dx$
10.  $\int_{-1}^1 \frac{x + 1}{(x^2 + 2x + 2)^3} dx$
11.  $\int_0^\pi \cos x \sqrt{\sin x} dx$
12.  $\int (x + 1) \sin(x^2 + 2x + 3) dx$
13.  $\int \left(1 + \frac{1}{t}\right)^3 \frac{1}{t^2} dt$
14.  $\int_{-1}^1 x^2 \sqrt{x^3 + 1} dx$
15.  $\int \frac{2}{\sqrt{3x - 7}} dx$
16.  $\int_1^4 \frac{1}{\sqrt{x}(\sqrt{x} + 1)^2} dx$
17.  $\int_0^1 \frac{x}{\sqrt{x + 1}} dx$
18.  $\int x \sqrt{2x + 1} dx$
19.  $\int \sqrt{x} \sqrt{x \sqrt{x} + 1} dx$
20.  $\int x^3 \sqrt{x^2 - 1} dx$
21.  $\int (x^2 + 1) \sqrt{x - 2} dx$
22.  $\int \frac{x^2 + 2x}{x^2 + 2x + 1} dx$
23.  $\int \frac{1}{x^2 + 6x + 9} dx$
24.  $\int \frac{\sec^2 x}{(1 + \tan x)^3} dx$
25.  $\int \frac{\sin x}{(2 + 3 \cos x)^2} dx$
26.  $\int x \tan(x^2) \sec(x^2) dx$
27.  $\int 3t^3(t^2 + 4)^5 dt$
28.  $\int (\tan 2x + \cot 2x)^2 dx$