

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. $\int (\tan 2x + \cot 2x)^2 dx$