

(MATHEMATICS)

INDEFINITE INTEGRATION

DPP-1

1. $\int \sqrt{x} dx$
3. $\int \frac{dx}{x^2}$
5. $\int a^x e^x dx$
7. $\int \frac{dh}{\sqrt{2gh}}$
9. $\int \frac{\sqrt{x-x^3} e^{x+x^2}}{x^3} dx$
11. $\int \frac{\sqrt[3]{x^2} - \sqrt[4]{x}}{\sqrt{x}} dx$
13. $\int \frac{3 \cdot 2^x - 2 \cdot 3^x}{2^x} dx$
15. $\int \frac{\cos 2x}{\cos^2 x \sin^2 x} dx$
17. $\int \cot^2 x dx$
19. $\int \sin x d(\sin x)$
21. $\int \frac{d(1+x^2)}{\sqrt{1+x^2}}$
23. $\int \sqrt[5]{(8-3x)^6} dx$
25. $\int \frac{m}{\sqrt[3]{(a+bx)^2}} dx$
27. $\int (\cos \alpha - \cos 2x) dx$
29. $\int \cos(1-2x) dx$
31. $\int \frac{dx}{cx+m}$
33. $\int a^{-x} dx$
35. $\int \frac{dx}{2x^2+9}$
37. $\int \frac{2^x dx}{\sqrt{1-4^x}}$
39. $\int \sin^2 x dx$
41. $\int \cos 2x \cos 3x dx$
43. $\int \cos x \cos 2x \cos 3x dx$
2. $\int \sqrt[n]{x^n} dx$
4. $\int 10^x dx$
6. $\int \frac{dx}{2\sqrt{x}}$
8. $\int 3.4x^{-0.17} dx$
10. $\int \frac{(1-x)^2}{x\sqrt{x}} dx$
12. $\int \frac{dx}{\sqrt{3-3x^2}}$
14. $\int \frac{1+\cos^2 x}{1+\cos 2x} dx$
16. $\int \tan^2 x dx$
18. $\int 2 \sin^2 \frac{x}{2} dx$
20. $\int \tan^3 x d(\tan x)$
22. $\int \frac{dx}{(2x-3)^5}$
24. $\int \sqrt{8-2x} dx$
26. $\int \frac{\sin x dx}{\cos^2 x}$
28. $\int \sin(2x-3) dx$
30. $\int \frac{dx}{2x-1}$
32. $\int a^{3x} dx$
34. $\int \frac{dx}{\sqrt{4-x^2}}$
36. $\int \frac{dx}{\sqrt{4-9x^2}}$
38. $\int \cos^2 x dx$
40. $\int \cos x \sin 3x dx$
42. $\int \sin 2x \sin 5x dx$
44. $\int \frac{dx}{\cos x}$

ANSWER KEY

1. $\frac{2}{3}\sqrt{x^3} + C.$
2. $\frac{mx^{m+1}}{n+m} + C.$
3. $C - \frac{1}{x}.$
4. $\approx 0.4343 \times 10^x + C.$
5. $\frac{(ae)^x}{1+\ln a} + C.$
6. $\sqrt{x} + C.$
7. $\sqrt{\frac{2h}{g}} + C.$
8. $\approx 4.1x^{0.83} + C.$
9. $C - \frac{2}{3x\sqrt{x}} - e^x + \ln |x|$
10. $\frac{2x^2-12x-6}{3\sqrt{x}} + C$
11. $\frac{6}{7}\sqrt[6]{x^7} - \frac{4}{3}\sqrt[4]{x^3} + C$
12. $\frac{1}{\sqrt{3}}\arcsin x + C.$
13. $3x - \frac{2(1.5)^x}{\ln 1.5} + C.$
14. $\frac{1}{2}(\tan x + x) + C.$
15. $C - \cot x - \tan x.$
16. $\tan x - x + C.$
17. $C - \cot x - x.$
18. $x - \sin x + C$
19. $\frac{\sin^2 x}{2} + C.$
20. $\frac{\tan^4 x}{4} + C.$
21. $2\sqrt{1+x^2} + C.$
22. $C - \frac{1}{8(2x-3)^4}$
23. $C - \frac{5}{33}(8-3x)^{11/5}$
24. $C - \frac{\sqrt{(8-2x)^3}}{3}.$
25. $\frac{3m}{b}\sqrt[3]{a+bx} + C.$
26. $\sec x + C.$
27. $x \cos \alpha - \frac{1}{2}\sin 2x + C.$
28. $C - \frac{1}{2}\cos(2x-3).$
29. $C - \frac{1}{2}\sin(1-2x).$
30. $\frac{1}{2}\ln|2x-1| + C.$
31. $\frac{1}{c}\ln|cx+m| + C.$
32. $\frac{a^{3x}}{3\ln a} + C.$
33. $C - \frac{a^{-x}}{\ln a}$
34. $\arcsin \frac{x}{2} + C$
35. $\frac{1}{3\sqrt{2}}\arcsin \frac{\sqrt{2}}{3}x + C$
36. $\frac{1}{3}\arcsin \frac{3x}{2} + C$
37. $\frac{\arcsin 2^x}{\ln 2} + C$
38. $\frac{x}{2} + \frac{\sin 2x}{4} + C.$
39. $\frac{x}{2} - \frac{\sin 2x}{4} + C$
40. $C - \frac{1}{4}\left(\frac{\cos 4x}{2} + \cos 2x\right)$
41. $\frac{1}{10}\sin 5x + \frac{1}{2}\sin x + C$
42. $\frac{1}{6}\sin 3x - \frac{1}{14}\sin 7x + C$
43. $\frac{1}{8}\left(2x + \sin 2x + \frac{1}{2}\sin 4x + \frac{1}{3}\sin 6x\right) + C.$
44. $\ln \left| \tan \left(\frac{\pi}{4} + \frac{x}{2} \right) \right| + C$