



## DPP-2

1.  $\int \tan x dx.$

2.  $\int \cot x dx.$

3.  $\int \tan^3 x dx$

4.  $\int \cot(2x + 1) dx.$

5.  $\int \frac{d\left(\frac{x}{3}\right)}{\sqrt{1-\left(\frac{x}{3}\right)^2}}.$

6.  $\int \frac{dx}{\sqrt{1-25x^2}}.$

7.  $\int \frac{dx}{1+9x^2}.$

8.  $\int \frac{dx}{x^2-7x+10}$

9.  $\int \frac{dx}{x^2+3x-10}$

10.  $\int \frac{dx}{4x^2-9}$

11.  $\int \frac{dx}{2-3x^2}$

12.  $\int \frac{dx}{(x-1)^2+4}$

13.  $\int \frac{dx}{\sqrt{1-(2x+3)^2}}.$

14.  $\int \frac{dx}{\sqrt{4x-3-x^2}}$

15.  $\int 2^x \cdot e^x dx$

16.  $\int \frac{1+\cos^2 x}{1+\cos 2x} dx$

17.  $\int \frac{1-\tan^2 x}{1+\tan^2 x} dx$

18.  $\int \frac{1+\tan^2 x}{1+\cot^2 x} dx$

19.  $\int \frac{e^{5\ln x}-e^{4\ln x}}{e^{3\ln x}-e^{2\ln x}} dx$

20.  $\int (e^{alnx} + e^{xlna}) dx (a > 0)$

21.  $\int \frac{\cos 2x}{\cos^2 x \sin^2 x} dx$

22.  $\int \frac{1+2x^2}{x^2(1+x^2)} dx$

23.  $\int 4\cos \frac{x}{2} \cdot \cos x \cdot \sin \frac{21}{2} x dx$

24.  $\int \frac{\cos x - \sin x}{\cos x + \sin x} (2 + 2\sin 2x) dx$

25.  $\int (3\sin x \cos^2 x - \sin^3 x) dx$

26.  $\int \cos x^\circ dx$

27.  $\int \frac{(1+x)^2}{x(1+x^2)} dx$

28.  $\int \frac{x}{2x+1} dx$

29.  $\int \frac{\sec 2x - 1}{\sec 2x + 1} dx$

30.  $\int \frac{2x-1}{x-2} dx$

31.  $\int \frac{e^{2x}-1}{e^x} dx$

32.  $\int \frac{\sin x + \cos x}{\sqrt{1+\sin 2x}} dx (\cos x + \sin x > 0)$

33.  $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$

34.  $\int \frac{x^6-1}{x^2+1} dx$

35.  $\int \frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x} dx$

36.  $\int \frac{x^4+x^2+1}{2(1+x^2)} dx$

37.  $\int \sqrt{1 - \sin 2x} dx$

38.  $\int \frac{\sin^6 x + \cos^6 x}{\sin^2 x \cos^2 x} dx$

39.  $\int \frac{(\sqrt{x}+1)(x^2-\sqrt{x})}{x\sqrt{x}+x+\sqrt{x}} dx$



## ANSWER KEY

1.  $C - \ln|\cos x|.$

2.  $\ln|\sin x| + C$

3.  $C - \frac{1}{3} \ln|\cos 3x|$

4.  $\frac{1}{2} \ln|\sin(2x+1)| + C$

5.  $\arcsin \frac{x}{3} + C$

6.  $\frac{1}{5} \arcsin 5x + C$

7.  $\frac{1}{3} \arctan 3x + C$

8.  $\frac{1}{3} \ln \left| \frac{x-5}{x-2} \right| + C$

9.  $\frac{1}{7} \ln \left| \frac{x-2}{x+5} \right| + C$

10.  $\frac{1}{12} \ln \left| \frac{2x-3}{2x+3} \right| + C$

11.  $\frac{1}{2\sqrt{6}} \ln \left| \frac{\sqrt{2}+x\sqrt{3}}{\sqrt{2}-x\sqrt{3}} \right| + C$

12.  $\frac{1}{2} \arctan \frac{x-1}{2} + C$

13.  $\frac{1}{2} \arcsin(2x+3) + C$

14.  $\arcsin(x-2) + C$

15.  $\frac{2^x \cdot e^x}{1+\ell \ln 2} + C$

16.  $\frac{1}{2}(\tan x + x) + C$

17.  $\frac{1}{2} \sin 2x + C$

18.  $\tan x - x + C$

19.  $\frac{x^3}{3} + C$

20.  $\frac{x^{a+1}}{a+1} + \frac{a^x}{\ell \ln a} + C$

21.  $-(\cot x + \tan x) + C$

22.  $-\frac{1}{x} + \tan^{-1} x + C$

23.  $-\left[ \frac{1}{9} \cos 9x + \frac{1}{10} \cos 10x + \frac{1}{11} \cos 11x + \frac{1}{12} \cos 12x \right] + C$

24.  $\sin 2x + C$

25.  $-\frac{\cos 3x}{3} + C$

26.  $\frac{180}{\pi} \sin x^\circ + C$

27.  $\ln x + 2\tan^{-1} x + C$

28.  $\frac{1}{2} \left[ x - \frac{\ln(2x+1)}{2} \right] + C$

29.  $\tan x - x + C$

30.  $2x + 3\ln(x-2) + C$

31.  $e^x + e^{-x} + C$

32.  $x + C$

33.  $2(\sin x + x \cos \alpha) + C$

34.  $\frac{x^5}{5} - \frac{x^3}{3} + x - 2\tan^{-1} x + C$

35.  $\sec x - \operatorname{cosec} x + C$

36.  $\frac{1}{2} \left[ \frac{x^3}{3} + \tan^{-1} x \right] + C$

37.  $(\sin x + \cos x) \operatorname{sgn}(\cos x - \sin x) + C$

38.  $\tan x - \cot x - 3x + C$

39.  $\frac{x^2}{2} - x + C$