



MATHS

BOOKS - IA MARON MATHS

(HINGLISH)

INDEFINITE INTEGRALS, BASIC METHODS OF INTEGRATION

**4 1 Direct Integration And The Method Of
Expansion**

1. Find the integral $I = \int \frac{x^2 + 5x - 1}{\sqrt{x}} dx$.



[Watch Video Solution](#)

2. $I = \int \frac{6x^3 + x^2 - 2x + 1}{2x - 1} dx$.



[Watch Video Solution](#)

3. $I = \int \frac{dx}{\sin^2 x \cos^2 x}$



[Watch Video Solution](#)

4. $\int \tan^2 x \, dx$



Watch Video Solution

5. $I = \int (x^2 + 5)^3 dx.$



Watch Video Solution

6. $I = \int (3x + 5)^{17} dx.$



Watch Video Solution

7.
$$\int \frac{dx}{\sqrt{x+1} - \sqrt{x}}$$



[Watch Video Solution](#)

8.
$$I = \int \cos(\pi x + 1) dx.$$



[Watch Video Solution](#)

9.
$$I = \int \cos 4x \cos 7x dx.$$



[Watch Video Solution](#)

10. Evaluate $\int \cos x \cos 2x \cos 5x dx$



[Watch Video Solution](#)

11. $I = \int \sin^2 3x dx.$



[Watch Video Solution](#)

12. $I = \int \cosh^2(8x + 5) dx.$



[Watch Video Solution](#)

$$13. I = \int \frac{dx}{x^2 + 4x + 5}.$$



[Watch Video Solution](#)

$$14. I = \int \frac{dx}{4x^2 + 25}$$



[Watch Video Solution](#)

$$15. I = \int \frac{dx}{x^2 + x + 1}$$



[Watch Video Solution](#)

$$16. I = \int \frac{dx}{\sqrt{4 - 9x^2}}.$$



Watch Video Solution

$$17. I = \int \frac{dx}{\sqrt{5 - x^2 - 4x}}.$$



Watch Video Solution

$$18. I = \int -\frac{dx}{\sqrt{x^2 + 6x + 1}}$$



Watch Video Solution

$$19. I = \int \frac{dx}{4 - x^2 - 4x}.$$



[Watch Video Solution](#)

$$20. I = \int \frac{dx}{10x^2 - 7}.$$



[Watch Video Solution](#)

21. Evaluate the following integrals :

$$(a) \int \frac{dx}{x^2 - 6x + 13},$$



[Watch Video Solution](#)

22. Evaluate the following integrals :

$$(b) \int \frac{x - 1}{\sqrt[3]{x^2}} dx,$$



[Watch Video Solution](#)

23. Evaluate the following integrals :

$$(c) \int \frac{3 - 2 \cot^2 x}{\cos^2 x} dx,$$



[Watch Video Solution](#)

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



Watch Video Solution

25. Integrate :

(a) $\int \frac{\sqrt{1 - x^2} + \sqrt{1 + x^2}}{\sqrt{1 - x^4}} dx,$



Watch Video Solution

26. Integrate :

(b) $\int \frac{\cos 2x}{\cos x - \sin x} dx,$



Watch Video Solution

$$27. \int \frac{2^{x+1} - 5^{x-1}}{10^x} dx$$



Watch Video Solution

28. Integrate :

$$(d) \int (\sin 5x - \sin 5\alpha) dx.$$



Watch Video Solution

4 2 Integration By Substitution

$$1. I = \int x \sqrt{x - 5} dx.$$



[Watch Video Solution](#)

$$2. I = \int \frac{dx}{1 + e^x}$$



[View Text Solution](#)

$$3. I = \int \frac{x^2 + 3}{\sqrt{2x - 5}^3} dx.$$



[View Text Solution](#)

4.

Evaluate:

$$\int \frac{x^2 - 1}{(x^4 + 3x^2 + 1)\tan^{-1}\left(x + \frac{1}{x}\right)} dx$$



[Watch Video Solution](#)

5. $I = \int \frac{\sqrt{a^2 - x^2}}{x^4} dx.$



[View Text Solution](#)

$$6. I = \int \frac{dx}{a^2 \sin^2 x + b^2 \cos^2 x}.$$



View Text Solution

$$7. I = \int \sqrt[3]{1 + 3 \sin x} \cos x dx.$$



Watch Video Solution

$$8. I = \int \frac{\sin x dx}{\sqrt{\cos x}}.$$



Watch Video Solution

$$9. I = \int \frac{dx}{(\arccos x)^5 \sqrt{1-x^2}}.$$



Watch Video Solution

$$10. I = \int \frac{x^2 + 1}{\sqrt[3]{x^3 + 3x + 1}} dx.$$



Watch Video Solution

$$11. I = \int \frac{\sin 2x}{1 + \sin^2 x} dx.$$



Watch Video Solution

12. $I = \int \frac{1 + \ln x}{3 + x \ln x} dx.$



[Watch Video Solution](#)

13. Evaluate the following integrals :

(a) $\int \frac{\sqrt[3]{1 + \ln x}}{x} dx,$



[Watch Video Solution](#)

14. Evaluate the following integrals :

(b) $\int \frac{dx}{x \ln x},$



[Watch Video Solution](#)

15. Evaluate the following integrals :

$$(c) \int \frac{x dx}{\sqrt{3 - x^4}},$$



[Watch Video Solution](#)

16. Evaluate the following integrals :

$$(d) \int \frac{x^{n-1}}{x^{2n} + a^2} dx,$$



[Watch Video Solution](#)

17. What is $\int \frac{\sin \sqrt{x}}{\sqrt{x}} dx$ equal to ?



[Watch Video Solution](#)

18. Evaluate the following integrals :

$$\int \left(\ln x + \frac{1}{\ln x} \right) \frac{dx}{x}.$$



[Watch Video Solution](#)

19. Find the following integrals :

(a) $\int x^2 \sqrt[3]{1-x} dx,$



[View Text Solution](#)

20. Find the following integrals :

(b) $\int \frac{\ln x dx}{x \sqrt{1 + \ln x}},$



[Watch Video Solution](#)

21. Find the following integrals :

(c) $\int \cos^5 x \sqrt{\sin x} dx,$



[View Text Solution](#)

22. Find the following integrals :

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

 [View Text Solution](#)

4 3 Integration By Parts

1. $I = \int \arctan x dx.$

 [View Text Solution](#)

2. $I = \int \arcsin x dx.$



[View Text Solution](#)

3. $\int (x \cos x) dx$



[Watch Video Solution](#)

4. $I = \int x^3 \ln x dx.$



[Watch Video Solution](#)

5. $\int (x^2 - 2x + 5)e^{-x} dx$



[Watch Video Solution](#)

6. Applying the method of indefinite coefficients, evaluate

$$I = \int (3x^3 - 17)e^{2x} dx.$$



[View Text Solution](#)

7. Integrate: $I = \int (x^3 + 1) \cos x dx.$



[View Text Solution](#)

$$8. I = \int (x^2 + 3x + 5) \cos 2x dx.$$



[View Text Solution](#)

$$9. I = \int (3x^2 + 6x + 5) \arctan x dx.$$



[Watch Video Solution](#)

10. Find the integral

$$I = \int e^{5x} \cos 4x dx.$$



[View Text Solution](#)

11. $I = \int \cos(\ln x) dx.$



[View Text Solution](#)

12. $I = \int x \ln \left(1 + \frac{1}{x} \right) dx.$



[View Text Solution](#)

13.

Evaluate

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



Watch Video Solution

14. What is $\int \sin x \log(\tan x) dx$ equal to ?



Watch Video Solution

15. $I = \int \ln(\sqrt{1-x} + \sqrt{1+x}) dx.$



[View Text Solution](#)

16. $\int \ln(x + \sqrt{1 + x^4}) dx.$



[View Text Solution](#)

17. $\int \sqrt[3]{x} (\ln x)^2 dx.$



[Watch Video Solution](#)

18. $\int \frac{\arcsin x dx}{\sqrt{1 + x}}.$



[Watch Video Solution](#)

19. $\int \frac{x \cos x dx}{\sin^3 x}$



[View Text Solution](#)

20. $\int 3^x \cos x dx.$



[View Text Solution](#)

21. $\int (x^3 - 2x^2 + 5) e^{3x} dx.$



[View Text Solution](#)

22. $\int (1 + x^2)^2 \cos x dx.$



[View Text Solution](#)

23. $\int (x^4 + 2x - 1) \sin 3x dx.$



[View Text Solution](#)

24. $\int (x^2 - 2x + 3) \ln x dx$



[View Text Solution](#)

25. $\int x^3 \arctan x dx.$



[Watch Video Solution](#)

26. $\int x^2 \arccos x dx.$



[Watch Video Solution](#)

27. Applying the formula for multiple integration by parts, calculate the following integrals :

(a) $\int (3x^2 + x - 2) \sin^2(3x + 1) dx,$



[View Text Solution](#)

28. Applying the formula for multiple integration by parts, calculate the following integrals :

(b) $\int \frac{x^2 - 7x + 1}{\sqrt[3]{2x + 1}} dx.$



[View Text Solution](#)

4 4 Reduction Formulas

1. Integrating by parts, derive reduction formulas for calculating the following integrals :

$$(a) I_n = \int \frac{dx}{(x^2 + a^2)^n},$$



[Watch Video Solution](#)

2. Integrating by parts, derive reduction formulas for calculating the following integrals :

$$(c) I_n = \int (a^2 - x^2)^n dx.$$



Watch Video Solution