



MATHS

BOOKS - JEEVITH PUBLICATIONS

MATHS (KANNADA ENGLISH)

INTEGRALS

One Marks Questions With Answers

1. Evaluate: $\int (1 - x)\sqrt{x} dx$



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2. Write the integral of $\frac{1}{x\sqrt{x^2-1}}$, $x > 1$ with respect to x .



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3. Write the ant derivative of e^{2x} with respect to x .



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4. $\sin 2x$



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5. $\cos 3x$.



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6. $(ax + b)^2$



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7. $\sin 2x - 4e^{3x}$.



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8. $\int(4e^{3x} + 1) dx$



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9. $\int x^2 \left(1 - \frac{1}{x^2}\right) dx$



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10. $\int(ax^2 + bx + c)dx$



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11. $\int(2x^2 + e^x)dx$



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12. $\int\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)^2 dx.$



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Two Marks Three Marks Questions With Answers

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



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2. $\int \log x dx.$



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3. $\int \log(\sin x) \cdot (\cot x) dx.$





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4. $\int_0^{\pi/2} \cos 2x dx.$



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5. $\int e^x \sec x (1 + \tan x) dx.$



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6. $\int \frac{x^3 + 5x^2 - 4}{x^2} dx.$



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$$7. \int \frac{(x^3) + 3x + 4}{\sqrt{x}} dx.$$



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$$8. \int \frac{x^3 - x^2 + x - 1}{(x - 1)} dx.$$



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$$9. \int (1 + x)\sqrt{x} dx.$$



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10. $\int \sqrt{x}(3x^2 + 2x + 3) dx.$



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11. $\int (2x - 3 \cos x + e^x) dx.$



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12. $\int (2x^2 - 3 \sin x + 5\sqrt{x}) dx.$



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13. $\int \sec(\sec x + \tan x) dx.$



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14. $\int \frac{\sec^2 x}{\operatorname{cosec}^2 x} dx.$



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15. $\int \frac{2 - 3 \sin x}{\cos^2 x} dx.$



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



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$$17. \int \frac{(\log x)^2}{x} dx.$$



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



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19. $\int \sin x \sin(\cos x) dx$



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20. $\int \sqrt{ax + b} dx.$



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21. $\int x \sqrt{x + 2} dx$



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$$22. \int x \sqrt{1 + 2x^2} dx.$$



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$$23. \int (4x + 2) \sqrt{x^2 + x + 1} dx.$$



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$$24. \int \frac{1}{x - \sqrt{x}} dx$$



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$$25. \int \frac{x}{\sqrt{x+4}} dx.$$



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$$26. \int (x^3 - 1)^{1/3} x^5 dx.$$



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$$27. \int \frac{x^2}{(2 + 3x^3)^3} dx$$



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$$28. \int \frac{1}{x(\log x)^m} dx$$



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$$29. \int \frac{x}{9 - 4x^2} dx$$



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$$30. \int e^{2x+3} dx.$$



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



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$$32. \int \frac{e^{\tan^{-1} x}}{1 + x^2} dx.$$



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$$33. \int \frac{e^{2x} - 1}{e^{2x} + 1} dx$$



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



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$$35. \int \tan^2(2x - 3) dx.$$



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$$36. \int \sec^2(7 - 4x) dx.$$



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



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$$38. \int \frac{2 \cos x - 3 \sin x}{6 \cos x + 4 \sin x} dx$$



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



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$$40. \int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$$



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$$41. \int \sqrt{\sin 2x} \cos 2x dx.$$



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$$42. \int \frac{\cos x}{\sqrt{1 + \sin x}} dx.$$



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$$43. \int \frac{\sin x}{1 + \cos x} dx.$$



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$$44. \int \frac{\sin x}{(1 + \cos x)^2} dx.$$



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$$45. \int x \sin x dx.$$



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46. $\int x \sin 3x dx.$



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47. Find $\int x \log x dx.$



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48. $\int x \log 2x dx.$



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49. $\int x^2 \log x dx.$



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50. $\int \sqrt{4 - x^2} dx.$



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51. $\int \sqrt{1 + 4x^2} dx.$



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52. $\int \sqrt{x^2 + 4x + 6} dx.$



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53. $\int \sqrt{x^2 + 4x + 1} dx.$



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54. $\int \sqrt{1 - 4x - x^2} dx.$



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$$55. \int \sqrt{x^2 + 4x - 5} dx.$$



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$$56. \int_{-1}^1 (x + 1) dx.$$



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$$57. \int_2^3 \frac{1}{x} dx.$$



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$$58. \int_1^2 (4x^3 - 5x^2 + 6x + 9) dx.$$



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$$59. \int_0^{\pi/2} \cos 2x dx.$$



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$$60. \int_4^5 e^x dx.$$



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Five Marks Questions With Answers

1. Find the integral of $\frac{1}{\sqrt{a^2 - x^2}}$ w.r.t.x and hence evaluate $\int \frac{dx}{\sqrt{7 - 6x - x^2}}$.



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2. Find the integral of $\frac{1}{x^2 + a^2}$ with respect to x and hence evaluate $\int \frac{1}{x^2 + 2x + 2} dx$.



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3. Find the integral of $\frac{1}{x^2 - a^2}$, w.r.t.x and hence evaluate $\int \frac{dx}{x^2 + 3x - 10}$



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4. Find the integral of $\frac{1}{a^2 - x^2}$ w.r.t.x and hence evaluate $\int \frac{dx}{16 - x^2}$.



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5. Find the integral of $\frac{1}{a^2 + x^2}$ w.r.t.x and hence evaluate $\int \frac{dx}{x^2 - 6x + 13}$.

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6. Find the integral of $\frac{1}{\sqrt{x^2 + a^2}}$ w.r.t.x and hence evaluate $\int \frac{dx}{\sqrt{x^2 + 7}}$.

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7. Find the integral of $\frac{1}{\sqrt{x^2 - a^2}}$ w.r.t.x and hence evaluate $\int \frac{dx}{\sqrt{x^2 + 6x + 7}}$.



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8. Find the integral of $\frac{1}{\sqrt{a^2 - x^2}}$ w.r.t.x and hence evaluate $\int \frac{dx}{\sqrt{7 - 6x - x^2}}$.



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9. Find the integral of $\sqrt{x^2 + a^2}$ with respect to x and evaluate $\int \sqrt{4x^2 + 9} dx$.



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10. Find the integral of $\frac{1}{x^2 + a^2}$ with respect to x and hence evaluate $\int \frac{1}{x^2 + 2x + 2} dx$.



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11. Find the integral of $\sqrt{x^2 - a^2}$ w.r.t.x and hence evaluate $\int \sqrt{x^2 + 4x - 5} dx$.

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12. Find the integral of $\sqrt{a^2 - x^2}$ w.r.t.x and hence evaluate $\int \sqrt{3 - 2x - x^2} dx$.

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13. Find the integral of $\sqrt{x^2 + a^2}$ w.r.t. x and hence evaluate $\int \sqrt{x^2 + 4x + 6}, dx$.



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14. Find the integral of $\sqrt{x^2 + a^2}$ with respect to x and evaluate $\int \sqrt{4x^2 + 9} dx$.



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Six Marks Questions With Answers

1. Prove that $\int_0^a f(x) dx = \int_0^a f(a-x) dx$
and hence evaluate $\int_0^{\frac{\pi}{4}} \log(1 + \tan x) dx$.



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2. Prove that $\int_a^b f(x) dx = \int_a^b f(a+b-x) dx$
and $\int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \frac{dx}{1 + \sqrt{\tan x}}$.



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3. Prove that

$$\int_{-a}^a dx = \begin{cases} 2\int_0^a f(x)dx & \text{if } f(x) \text{ is even} \\ 0 & \text{if } f(x) \text{ is odd} \end{cases}$$

and hence evaluate

(a) $\int_{-1}^1 \sin^5 x \cos^4 x dx.$



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4. Prove that

$$\int_{-a}^a dx = \begin{cases} 2\int_0^a f(x)dx & \text{if } f(x) \text{ is even} \\ 0 & \text{if } f(x) \text{ is odd} \end{cases}$$

and hence evaluate

$$(b) \int_{-\pi/2}^{\pi/2} \sin^7 x dx.$$



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5. Prove that

$$\int_{-a}^a dx = \begin{cases} 2 \int_0^a f(x) dx & \text{if } f(x) \text{ is even} \\ 0 & \text{if } f(x) \text{ is odd} \end{cases}$$

and hence evaluate

$$(c) \int_0^{\pi} |\cos x| dx.$$



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6.

Prove

that

$$\int_{-a}^a dx = \begin{cases} 2\int_0^a f(x)dx & \text{if } f(x) \text{ is even} \\ 0 & \text{if } f(x) \text{ is odd} \end{cases}$$

and hence evaluate

(d) $\int_{-\pi/2}^{\pi/2} \tan^9 x dx.$

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7. Prove that $\int_0^{2a} f(x)dx = 2\int_0^a f(x)dx$

when $f(2a - x) = f(x)$ and hence evaluate

$$\int_0^{\pi} |\cos x| dx.$$

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8. Prove that $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

and hence evaluate the following:

(a) $\int_0^a \frac{\sqrt{x}}{\sqrt{x} + \sqrt{a-x}} dx$



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9. Prove that $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

and hence evaluate the following:

(b) $\int_0^{\frac{\pi}{2}} \cos^2 x dx.$



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10. Prove that $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

and hence evaluate the following:

(c) $\int_0^{\frac{\pi}{2}} \frac{\sqrt{\sin x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx$

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11. Prove that $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

and hence evaluate the following:

(d) $\int_0^1 x(1-x)^n dx.$

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12. Prove that $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

and hence evaluate the following:

(e) $\int_0^2 x\sqrt{2-x}dx.$



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13. Prove that $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

and hence evaluate the following:

(f) $\int_0^\pi \frac{xdx}{a^2 \cos^2 x + b^2 \sin^2 x}$



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Try Yourself

1. $\int_a^b x dx.$



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2. $\int_0^5 (x + 1) dx.$



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3. $\int_2^3 x^2 dx.$



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4. $\int_1^4 (x^2 - x) dx.$



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5. $\int_{-4}^1 e^x dx.$



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6. $\int_0^4 (x + e^{2x}) dx.$



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7. $\int_0^2 \frac{6x + 3}{x^2 + 4} dx.$



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8. $\int_0^{\pi/2} \sqrt{\sin \phi} \cos^5 \phi d\phi.$



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9. $\int_0^1 \sin^{-1} \left(\frac{2x}{1+x^2} \right) dx.$



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10. $\int_0^1 \frac{1}{x+4-x^2} dx.$



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11. $\int_0^{\pi/2} \sqrt{\sin \phi} \cos^5 \phi d\phi.$



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12. $\int_0^1 \sin^{-1} \left(\frac{2x}{1+x^2} \right) dx.$



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13. $\int x \sqrt{x+2} dx$



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14. $\int_0^{\pi/2} \frac{\sin x}{1+\cos^2} dx.$



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$$15. \int_0^2 \frac{1}{x + 4 - x^2} dx.$$



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$$16. \int_1^{-1} \frac{1}{x^2 + 2x + 5} dx.$$



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$$17. \int_1^2 \left(\frac{1}{x} - \frac{1}{2x^2} \right) e^{2x} dx.$$



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18. The value of the integral

$$\int_{1/3}^1 \frac{(x - x^3)^{\frac{1}{3}}}{x^4} dx \text{ is}$$

A. 6

B. 0

C. 3

D. 4

Answer:



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19. If $f(x) = \int_0^x t \sin t dt$, then $f'(x)$ is

A. $\cos x + x \sin x$

B. $x \sin x$

C. $x \cos x$

D. $\sin x + x \cos x$

Answer:



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20. $\int_0^{\pi} \log(1 + \cos x) dx.$



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21. $\int_0^a \frac{\sqrt{x}}{\sqrt{x} + \sqrt{a-x}} dx.$



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