MATHS

BOOKS - MAXIMUM PUBLICATION

INTEGRALS

Example

1. Integrate the following.

$$\int \sin x \sin 2x \sin 3x dx$$

Watch Video Solution

2. Integrate the following.

$$\int \sec^2 x \cos^2 2x dx$$

Watch Video Solution

3. Find $\int \frac{2 + \sin 2x}{1 + \cos 2x} e^x dx$

Watch Video Solution

4. Evaluate $\int \frac{\sec^2 x dx}{\sqrt{\tan^2 x + 4}}$

Watch Video Solution

5. Find the following integrals.

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

Watch Video Solution

6. Find the following integrals.

$$\int_0^1 x e^{x^2} dx$$

Watch Video Solution

7. Find the following integrals.

$$\int_0^{\frac{\pi}{2}} \sqrt{\sin x} \cos^5 x dx$$

Watch Video Solution

8. Find the following integrals.

$$\int_0^2 x\sqrt{x+2}dx$$

Watch Video Solution

9. Find the following integrals.

$$\int_0^{\frac{\pi}{2}} \sqrt{\sin x} \cos x dx$$

Watch Video Solution

10. Find the following integrals.

$$\int_0^{\frac{\pi}{2}} \frac{1}{4\sin^2 x + 5\cos^2 x} dx$$

Watch Video Solution

11. If $f(x)$ is an odd function,then $\int_{-a}^{a} f(x) = ?$

A. 0

B. 1

C. $2\int_{0}^{a} f(x)dx$

D. 2a

Answer:

Watch Video Solution

12. Evaluate

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^{99} x \cdot \cos^{100} x dx$$

Watch Video Solution

13. Evaluate

$$\int_{-1}^{1} e^{|x|} dx$$

Watch Video Solution

14. Show that $\cos^2 x$ is an even function.

Watch Video Solution

15. Evaluate $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \cos^2 x dx$

Watch Video Solution

16. Find the following integrals.

$$\int \frac{1}{9x^2 + 6x + 5} dx$$

Watch Video Solution

17. Find the following integrals.

$$\int \frac{1}{\sqrt{7-6x-x^2}}dx$$

Watch Video Solution

18. Find the following integrals.

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

Watch Video Solution

19. Find the following integrals.

$$\int_0^{\frac{\pi}{2}} \frac{\sin^5 x}{\sin^5 x + \cos^5 x} dx$$

Watch Video Solution

20. Find the following integrals.

$$\int_0^2 x\sqrt{2-x}dx$$

Watch Video Solution

21. Find the following integrals.

$$\int_2^8 |x-5|dx$$

Watch Video Solution

22. Find the following integrals.

$$\int_{-5}^5 |x+2|dx$$

Watch Video Solution

23. Find the following integrals.

$$\int \frac{1}{3+\cos x}dx$$

Watch Video Solution

24. Find the following integrals.

$$\int \frac{2x}{x^2+3x+2}dx$$

Watch Video Solution

25. Find the following integrals.

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

Watch Video Solution

26. Find the following integrals.

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

Watch Video Solution

27. Find the following integrals.

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

Watch Video Solution

28. Find the following integrals.

$$\int e^{2x}\sin 3x dx$$

Watch Video Solution

29. Find the following integrals.

$$\int x \sin^{-1} x dx$$

Watch Video Solution

30. which of the following is the value of

$$\int \frac{dx}{\sqrt{a^2 - x^2}}$$

A. $\frac{1}{a} \tan^{-1} \frac{x}{a} + c$

B. $\tan^{-1} \frac{x}{a} + c$

C. $\sin^{-1} \frac{x}{a} + c$

D. $\frac{1}{a}\sin^{-1}\frac{x}{a}+c$

Answer:

Watch Video Solution

31. Evaluate $\int\frac{2x}{x^2+3x+2}dx$

Watch Video Solution

32. Choose the correct answer from the bracket.

$\int e^x dx$=----

$(e^{2x}+c, e^x+c, e^{-x}+c, e^{-2x}+c)$

Watch Video Solution

33. Evaluate $\int e^x \sin x dx$

Watch Video Solution

34. $f(x)\int g(x)dx - \int\left(f'(x)\int g(x)dx\right)dx$

A. $\int f'(x)g(x)dx$

B. $\int f(x)g'(x)dx$

C. $\int \frac{f(x)}{g(x)}dx$

D. $\int f(x)g(x)dx$

Answer:

Watch Video Solution

35. Integrate $\sin^{-1}\sqrt{\frac{x}{a+x}}$ w.r.to x.

Watch Video Solution

36. Match the following.

A	B
$\int \frac{1}{x^2-9}dx$	$\frac{e^{3x}}{3}+c$
$\int \sec x(\sec x+\tan x)dx$	$e^{3x}+c$
$\int e^{3x}dx$	$\sec x.\tan x+c$
$\int (\sin x+\cos x)dx$	$\sec x+\tan x+c$
	$\frac{1}{6}\log\left\|\frac{x-3}{x+3}\right\|+c$
	$\sin x-\cos x+c$

Watch Video Solution

37. Evaluate $\int \frac{x}{\sqrt{x+a}+\sqrt{x+b}}dx$

Watch Video Solution

38. Match the following.

A	B
$\int \frac{1}{x^2-9}dx$	$\frac{e^{3x}}{3}+c$
$\int \sec x(\sec x+\tan x)dx$	$e^{3x}+c$
$\int e^{3x}dx$	$\sec x.\tan x+c$
$\int (\sin x+\cos x)dx$	$\sec x+\tan x+c$
	$\frac{1}{6}\log\left\|\frac{x-3}{x+3}\right\|+c$
	$\sin x-\cos x+c$

Watch Video Solution

39. Consider the integral I= $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

what substitution can be given for simplifying

the above integral

Watch Video Solution

40. Evaluate the integral I= $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

Watch Video Solution

41. Consider the integral $I=\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

Evaluate I.

Watch Video Solution

42. Evaluate $\int_0^{\frac{\pi}{2}} \log(\tan x) dx$

Watch Video Solution

43. Find the following integrals.

$\int \frac{\sec^2 x}{\cos ec^2 x} dx$

Watch Video Solution

44. Find the following integrals

$$\int \frac{1}{x^2 - 6x + 13} dx$$

Watch Video Solution

45. Match the following.Justify your answer

A	B
$\int \frac{1}{1+x^2}dx$	$\sin^{-1}x+c$
$\int \frac{1}{\sqrt{1-x^2}}dx$	$x\tan^{-1}x-\frac{1}{2}\log(1+x^2)+c$
$\int \tan^{-1}x\,dx$	$\frac{(\tan^{-1}x)^2}{2}+c$
$\int \frac{\tan^{-1}x}{1+x^2}dx$	$\frac{1}{1+x^2}+c$
	$\tan^{-1}x+c$

Watch Video Solution

46. $\int \sin 2x\,dx$ =

A. $2\cos x + c$

B. $-2\sin x + c$

C. $\frac{\cos 2x}{2} + c$

D. $-\frac{\cos 2x}{2} + c$

Answer:

Watch Video Solution

47. (i)Resolve $\frac{x^2+1}{x^2-5x+6}$ into partial fractions.

(ii)Hence evaluate $\int \frac{x^2+1}{x^2-5x+6}$

Watch Video Solution

48. Evaluate. $\int_0^4 x dx$ as a limit of sum

Watch Video Solution

49. Define the real valued function

$f(x) = |x^2 + 2x - 3|$

Watch Video Solution

50. Evaluate $\int_0^2 \left|x^2 + 2x - 3\right| dx$

Watch Video Solution

51. Consider the function

$f(x) = |x| + |x + 1|$

define trhe function `f(x) in the interval

[-2,1]

Watch Video Solution

52. Consider the function

$$f(x) = |x| + |x+1|$$

Find the integral $\int_{-2}^{1} f(x)dx$

Watch Video Solution

53. Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{dx}{1+\sqrt{\tan x}} dx$

Watch Video Solution

54. Fill in the blanks.

$\int \tan x dx$=---

Watch Video Solution

55. Fill in the blanks

$\int \cos x dx$=---

Watch Video Solution

56. Fill in the blanks

$$\int \frac{1}{x} dx = \text{---}$$

Watch Video Solution

57. Evaluate $\int \sin^3 x \cos^2 x dx$

Watch Video Solution

58. Find the following integrals.

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

Watch Video Solution

59. Find the following integrals.

$$\int \frac{2x-3}{x^2+3x-18}dx$$

Watch Video Solution

60. Find the following integrals.

$$\int \frac{5x+2}{1+2x+3x^2}dx$$

Watch Video Solution

61. Find the following integral.

$$\int \frac{5x+3}{\sqrt{x^2+4x+10}}\,dx$$

Watch Video Solution

62. Consider the expression $\frac{1}{x^3-1}$

Split it into partial fraction.

Watch Video Solution

63. Consider the expression $\frac{1}{x^3 - 1}$

Split it into partial fraction.

Watch Video Solution

64. Match the following

A	B
$\int \sin 3x dx$	$\frac{x}{2} + \frac{1}{4}\sin 2x + c$
$\int x \sin x dx$	$\log(1+x^2) + c$
$\int \frac{2x}{1+x^2} dx$	$-\frac{1}{3}\cos 3x + c$
$\int \cos^2 x dx$	$2\cos x \sin x + c$
	$-x\cos x + \sin x + c$
	$\log\lvert\tan x\rvert + c$

Watch Video Solution

65. consider the function $f(x) = \frac{x^4}{x+1}$

Evaluate $\int f(x)dx$

Watch Video Solution

66. (i)Evaluate the $\int_0^2 x^2 dx$ as the limit of a sum.

(ii) Hence evaluate $\int_{-2}^2 x^2 dx$

Watch Video Solution

67. Find $\int \sqrt{\tan x}\, dx$

Watch Video Solution

68. Match the following

A	B
$\int \frac{1}{1+x^2} dx$	$\cot^{-1} x + c$
$\int \sec^2 x dx$	$x^3 + c$
$\int 3x^2 dx$	$\tan x + c$
$\int \operatorname{cosec} x\, dx$	$\tan^{-1} x + c$
	$\log\left\|\tan\frac{x}{2}\right\| + c$

Watch Video Solution

69. Integrate $\frac{\sec^2 x}{5\tan^2 x - 12\tan x + 4}$

Watch Video Solution

70. Evaluate $\int_0^1 \sqrt{x}dx$

Watch Video Solution

71. (i)If $\int_0^a \sqrt{x}dx = 2a\int_0^{\frac{\pi}{2}} \sin^3 x dx$,find the value of a.

(ii)Hence find $\int_a^{a+1} x dx$

Watch Video Solution

72. Let $f(x)$ be a function,then $\int_0^a f(x)dx$=?

A. $2\int_0^a f(x-a)dx$

B. $\int_0^a f(a-x)dx$

C. $f(a)$

D. $2\int_0^a f(a-x)dx$

Answer:

Watch Video Solution

73. Evaluate

$$\int_0^2 \frac{\sqrt{x}}{\sqrt{x}+\sqrt{2-x}}dx$$

Watch Video Solution

74. $\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x+\cos x}dx$

Watch Video Solution

75. Find the following integrals

$$\int \frac{2e^x}{e^{3x} - 6e^{2x} + 11e^x - 6}$$

Watch Video Solution

76. Find the following integrals

$$\int \frac{(3\sin x - 2)\cos x}{5 - \cos^2 x - 4\sin x} dx$$

Watch Video Solution

77. Find $\int \frac{1}{x^2 + a^2} dx$

Watch Video Solution

78. show that $3x + 1 = \frac{3}{4}(4x - 2) + \frac{5}{2}$

Watch Video Solution

79. Evaluate $\int \frac{3x + 1}{2x^2 - 2x + 3} dx$

Watch Video Solution

80. Find the Following integrals.

$$\int x^2 e^{2x} dx$$

Watch Video Solution

81. Find the Following integrals.

$$\int e^x \sin x dx$$

Watch Video Solution

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

A. $e^x \cos x + c$

B. $e^x \sec x + c$

C. $e^x \tan x + c$

D. $e^x \sin x + c$

Answer:

Watch Video Solution

83. Find $\int \sin 2x \cos 3x dx$

Watch Video Solution

84. Find the following integrals.

$$\int \frac{1}{(x+1)(x+2)}\,dx$$

Watch Video Solution

85. Find the following integrals.

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

Watch Video Solution

86. Consider the integral

$$I = \int_0^{\pi} \frac{x \sin x}{1 + \cos^2 x} dx$$

Express $I = \frac{\pi}{2} \int_0^{\pi} \frac{\sin x}{1 + \cos^2 x} dx$

Watch Video Solution

87. Consider the integral

$$I = \int_0^{\pi} \frac{x \sin x}{1 + \cos^2 x} dx$$

Show that $I = \frac{\pi^2}{4}$

Watch Video Solution

88. Evaluate: $\int_2^3 \frac{x}{x^2+1} dx$

Watch Video Solution

89. Evaluate: $\int_0^{\pi} \frac{x}{1+\sin x} dx$

Watch Video Solution

90. Find $\int_0^1 (2x+3) dx$ as the limit of a sum.

Watch Video Solution

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

Watch Video Solution

92. Find $\int_0^5 (x+1)dx$ as limit of a sum.

Watch Video Solution

93. Evaluate $\int_0^4 x^2 dx$ as the limit of a sum.

Watch Video Solution

94. Fill in the blanks $\int \frac{1}{x} dx = \_ \_ \_$

Watch Video Solution

95. Evaluate $\int \frac{5x+1}{x^2-2x-35} dx$

Watch Video Solution

96. Integrate with respect to x. $\sqrt{x^2+4x+8}$

Watch Video Solution

97. Evaluate $\int -\frac{\cos ec^2 x}{\sqrt{\cot^2 x + 9}} dx$

Watch Video Solution

98. Evaluate $\int \left(\cos^{-1} x\right)^2 dx$

Watch Video Solution

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

Watch Video Solution

100. Evaluate $\int_0^2 e^x dx$ as limit of a sum.

Watch Video Solution

101. Find $\int \cot x dx$

Watch Video Solution

102. Evaluate the integrals

$\int \sin 2x \cos 4x dx$

Watch Video Solution

103. Evaluate the integrals

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

Watch Video Solution

104. Evaluate $\int_0^1 x dx$ as the limit of a sum.

Watch Video Solution

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

Watch Video Solution

106. Evaluate $\int_1^2 \frac{1}{x(1+\log x)^2} dx$

Watch Video Solution

107. Evaluate $\int_0^3 (2x^2+3)dx$ as the limit of a sum.

Watch Video Solution

108. What is $\int \frac{1}{9+x^2} dx = ?$

Watch Video Solution

109. Evaluate the integrals

$$\int \frac{1}{1+x+x^2+x^3} dx$$

Watch Video Solution

110. Evaluate $\int_0^3 f(x)dx,$

Where $f(x) = \begin{cases} x + 3 & 0 \leq x \leq 2 \\ 3x & 2 \leq x \leq 3 \end{cases}$

Watch Video Solution

111. Prove that

$$\int_0^1 \log\left(\frac{x}{1-x}\right)dx = \int_0^1 \log\left(\frac{1-x}{x}\right)dx.$$

Find the value of $\int_0^1 \log\left(\frac{x}{1-x}\right)dx$

Watch Video Solution

112. Find $\int \cot x dx = \ldots\ldots$

Watch Video Solution

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

Watch Video Solution

114. Find $\int \frac{x-1}{(x-2)(x-3)} dx$

Watch Video Solution

115. Evaluate

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

Watch Video Solution

116. Evaluate $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{dx}{1+\sqrt{\tan x}}$

Watch Video Solution

117. Evaluate

$\int x^2 \tan^{-1} x dx$

Watch Video Solution

118. Evaluate $\int_{-1}^{2} \left|x^3 - x\right| dx$

Watch Video Solution

119. Evaluate. $\int_{0}^{\frac{\pi}{4}} \log(1 + \tan x) dx$

Watch Video Solution

120. The value of $\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} \cos x dx$

Watch Video Solution

121. Prove that $\int_0^{\pi} \frac{x}{a^2 \cos^2 x + b^2 \sin^2 x} dx = \frac{\pi^2}{2ab}$

Watch Video Solution

122. $\int \frac{1}{x^2 + a^2} dx = ...$

Watch Video Solution

123. Find $\int \frac{1}{9x^2 + 6x + 5} dx$

Watch Video Solution

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

Watch Video Solution

125. Integrate the following

$$\frac{x-1}{x+1}$$

Watch Video Solution

126. Integrate the following

$$\frac{\sin x}{\sin(x-a)}$$

Watch Video Solution

127. Integrate the following $\frac{1}{\sqrt{3-2x-x^2}}$

Watch Video Solution

128. Prove that $\int \cos^2 x dx = \frac{x}{2} + \frac{\sin 2x}{4} + c$

Watch Video Solution

129. Find $\int \frac{1}{\sqrt{2x - x^2}} dx$

Watch Video Solution

130. Find $\int x \cos x dx$

Watch Video Solution

131. Find the following: $\int \frac{1}{x(x^7 + 1)} dx$

Watch Video Solution

132. Find the following: $\int_1^4 |x-2|dx$

Watch Video Solution

133. Find $\int_0^{\frac{\pi}{2}} \log \sin x dx$

Watch Video Solution

134. Find the following:

$$\int \cot x \log(\sin x) dx$$

Watch Video Solution

135. Find the following:

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

Watch Video Solution