

Class: XII
Subject: Maths
Topic: Definite Integration
No. of Questions: 25

Q1. $\int_{-1}^1 \frac{|x+2|}{x+2} dx =$

- A. 0
- B. 2
- C. 1
- D. none of these

Q2. $\int_0^{\pi/2} \sin^2 x dx =$

- A. $\pi/4$
- B. $\pi/3$
- C. $\pi/2$
- D. none of these

Q3. $\int_0^{\pi} \sqrt{1 - \cos x} dx =$

- A. 2
- B. 1
- C. $\sqrt{2}$
- D. $2\sqrt{2}$

Q4. $\int_0^{\pi} \sqrt{1 + \sin x} \, dx =$

- A. 2
- B. $2\sqrt{2}$
- C. 4
- D. none of these

Q5. Evaluate: $\int_0^{2\pi} \sqrt{1 + \sin(x/2)} \, dx$

- A. 8
- B. 2
- C. 4
- D. None of these

Q6. $\int_0^2 \sqrt{\frac{2+x}{2-x}} \, dx =$

- A. $\left(\frac{\pi}{2} + 1\right)$
- B. $(\pi + 1)$
- C. $\left(\pi + \frac{3}{2}\right)$
- D. none of these

Q7. $\int_3^6 4^x dx =$

- A. 24
- B. 36
- C. 48
- D. 12

Q8. $\int_0^2 [2x] dx =$

- A. 2
- B. 3
- C. 4
- D. none of these

Q9. $\int_{-1}^2 x|x| dx =$

- A. 3
- B. 7/3
- C. 2
- D. none of these

Q10. $\int_0^{\pi} |\cos \theta - \sin \theta| d\theta =$

- A. $2\sqrt{2}$
- B. 2
- C. $\sqrt{2}$
- D. none of these

Q11. $\int_0^4 \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right) dx =$

- A. 14/3
- B. 20/3
- C. 8/3
- D. None of these

Q12. Evaluate: $\int_0^{\pi/2} \frac{1}{1 + \sqrt{\tan x}} dx$

- A. $\pi/2$
- B. 0
- C. $\pi/4$
- D. None of these

Q13. The value of $\int_0^{\pi/2} \sin x e^{\cos x} dx$ is

- A. $e^{\pi/2} - 1$
- B. e
- C. -1
- D. e - 1

Q14. $\int_0^{\pi/2} \frac{\sqrt{\cot x} dx}{\sqrt{\cot x} + \sqrt{\tan x}} dx =$

- A. $\pi/4$
- B. $\pi/2$
- C. π
- D. 0

Q15. $\int_{-8}^8 (\sin^{93} x + x^{295}) dx =$

- A. 0
- B. a number different from 0
- C. $2(8^{295} + 1)$
- D. $2 + 8^{295}$

Q16. $\int_0^{\pi/2} \sin x \sin 2x dx$

- A. $2/3$
- B. $1/3$
- C. $\pi/3$
- D. none of these

Q17. $\int_0^{\pi/2} e^{3 \cos x} \sin x dx =$

- A. $1/3(1 - e^3)$
- B. $1/3(e^3 - 1)$
- C. $(1 - e^{-3})$
- D. none of these

Q18. $\int_0^1 \frac{dx}{(1+x^2)^{3/2}} =$

- A. $3/\sqrt{2}$
- B. $1/\sqrt{2}$
- C. $\sqrt{3}/2$
- D. none of these

$$\int_0^{\frac{\pi}{2}} \sin^4 x \cos^3 x \, dx =$$

Q19.

- A. $\pi/16$
- B. $\pi/32$
- C. $16/\pi$
- D. $2/35$

$$\int_0^{\frac{\pi}{2}} \sin^7 x \, dx =$$

Q20.

- A. $3\pi/16$
- B. $16\pi/35$
- C. $16/35$
- D. none of these

Q21. Using the properties of definite integrals,

$$\text{Evaluate } \int_0^a \frac{\sqrt{x}}{\sqrt{x+\sqrt{a-x}}} \, dx.$$

[All India 2008C]

Q22. Evaluate $\int_0^{\pi/4} \log(1 + \tan x) \, dx$.

[Delhi 2013C; All India 2010, 2008C]

Right Answer Explanation:

Q23. Evaluate $\int_0^{\pi/2} \frac{x \sin x \cos x}{\sin^4 x + \cos^4 x} \, dx$.

[Delhi 2011; All India 2010C]

Q24. Evaluate $\int_1^3 (x^2 + 5x) dx$ as the limit of a sum.

[Delhi 2008C]

Q25. Evaluate $\int_0^1 \cot^{-1}(1 - x + x^2) dx$.

[Hots; Delhi 2008]

askIITians