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Practice **Set 1** Solution

Mathematics

INTEGRATION

Topics :

Concept of Integration, Working rules and Integral of standard functions, Method of substitution & Integration by parts (simple examples), Definite Integral (simple examples)

DDCET final exam weightage of this topic : 4 Questions (8 Marks)

Total Practice sets
of this topic :

$8 \text{ (sets) } \times 25 \text{ (questions) } = 200 \text{ Questions}$

Total Practice tests
of this topic :

$5 \text{ (exams) } \times 25 \text{ (questions) } = 125 \text{ Questions}$

Offline / Online
during lecture :

$4 \text{ (lectures) } \times 50 \text{ (Questions) } = 200 \text{ Question}$



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Section 2:

7. Integration:

1. $\int x^2 dx =$

(A) $2x + C$

(B) $x^3 + C$

(C) $x^2/2 + C$

(D) $x^3/3 + C$ ✓

2. $\int \sin x dx =$

(A) $\cos x$

(B) $-\cos x$

(C) $-\cos x + C$ ✓

(D) $\sec x + C$

3. $\int \frac{1}{x} dx =$

(A) x^2

(B) $1/x + C$

(C) $x + C$

(D) $\log|x| + C$ ✓

4. $\int e^x dx =$

(A) $ex + C$

(B) $e^x + C$ ✓

(C) $\log x$

(D) $x e^x$

5. $\int x e^x dx =$

(A) $(x - 1)e^x + C$ ✓

(B) $x^2 e^x + C$

(C) $xe^x + C$

(D) e^x

6. $\int \frac{1}{x^2+25} dx =$

(A) $\tan^{-1} x + C$

(B) $\tan^{-1} \frac{x}{5} + C$

(C) $\frac{1}{5} \tan^{-1} \frac{x}{5} + C$ ✓

(D) $\frac{1}{5} \tan^{-1} x + C$

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7. $\int \frac{1}{\sqrt{4-x^2}} dx =$

(A) $\sin^{-1} x + C$

(B) $\sin^{-1} \frac{x}{2} + C$ ✓

(C) $\frac{1}{2} \sin^{-1} \frac{x}{2} + C$

(D) $\frac{1}{2} \sin^{-1} x + C$

8. $\int \left(x + \frac{1}{x}\right)^2 dx =$

(A) $\frac{x^3}{3} + 2x - \frac{1}{x} + C$ ✓

(B) $\frac{x^3}{3} - 2x + \frac{1}{x} + C$

(C) $x^3 + x - \frac{1}{x} + C$

(D) $x^3 + 2x - \frac{1}{x} + C$

9. $\int \cos(10x - 17) dx = \underline{\hspace{2cm}} + C$. [DDCET-2024]

(A) $10 \sin(10x - 17)$

(B) $-10 \sin(10x - 17)$

(C) $\frac{1}{10} \sin(10x - 17)$ ✓

(D) $-\frac{1}{10} \sin(10x - 17)$

10. $\int_{-1}^1 \sin^5 x \cdot \cos^8 x dx = \underline{\hspace{2cm}}$. [DDCET-2024]

(A) -1

(B) 0 ✓

(C) $\frac{1}{2}$

(D) $\frac{1}{4}$

11. $\int_{-2}^2 x^5 \cos x dx = \underline{\hspace{2cm}}$.

(A) 0 ✓

(B) 2

(C) -2

(D) 1

12. $\int_{-a}^a \cos x dx = \underline{\hspace{2cm}}$.

(A) 0

(B) $2\sin a$ ✓

(C) $2\sin x$

(D) $\sin a$

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13. $\int_{-a}^a x^2 \sin x \, dx = \underline{\hspace{2cm}}.$

(A) 0 ✓

(B) a^3

(C) $2a^2$

(D) $2a$

14. $\int e^{x \log a} \, dx = \underline{\hspace{2cm}} + C.$

(A) $e^{a \log a}$

(B) $e^{x \log a}$

(C) $a^x / \log a$ ✓

(D) $\log a$

15. $\int \sec^2 x - \tan^2 x \, dx = \underline{\hspace{2cm}} + C.$

(A) x ✓

(B) $2x$

(C) $\tan 2x$

(D) 1

16. $\int \tan^2 x \, dx = \underline{\hspace{2cm}} + C.$

(A) $2 \tan x \sec x$

(B) $\tan x - x$ ✓

(C) $\tan x + x$

(D) $\sec x \tan x$

17. $\int \sqrt{1 + \sin 2x} \, dx = \underline{\hspace{2cm}} + C.$

(A) $\sin x - \cos x$ ✓

(B) $\sin x + \cos x$

(C) $\cos x - \sin x$

(D) $\cos x + \sin x$

18. $\int e^x (\operatorname{cosec}^2 x - \cot x) \, dx = \underline{\hspace{2cm}} + C. \text{ [DDCET-2024]}$

(A) $e^x \operatorname{cosec}^2 x$

(B) $-e^x \operatorname{cosec}^2 x$

(C) $e^x \cot x$

(D) $-e^x \cot x$ ✓

19. $\int \frac{x-3}{x^2-6x+40} \, dx = \underline{\hspace{2cm}} + C. \text{ [DDCET-2024]}$

(A) $\frac{1}{2} \log |x^2 - 6x + 40|$ ✓

(B) $-\frac{1}{2} \log |x^2 - 6x + 40|$

(C) $2 \log |x^2 - 6x + 40|$

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(D) $-2 \log |x^2 - 6x + 40|$

20. $\int_{-1}^1 e^x dx =$ _____.

(A) $2e$

(B) 1

(C) $e-1$

(D) $2\sinh(1)$ ✓

21. $\int_{-1}^1 (x^2 + 1) dx =$ _____.

(A) $\frac{8}{3}$ ✓

(B) $\frac{3}{8}$

(C) 1

(D) 0

22. $\int e^x \sec^2 x dx =$ _____ + C.

(A) $e^x \tan x$ ✓

(B) $\sec^2 x$

(C) $e^x \sec x$

(D) $\tan x$

23. $\int \frac{x+1}{x^2+2x+5} dx =$ _____ + C.

(A) $\log |x^2 + 2x + 5|$

(B) $\frac{1}{2} \log |x^2 + 2x + 5|$ ✓

(C) $2 \log |x^2 + 2x + 5|$

(D) $-2 \log |x^2 + 2x + 5|$

24. $\int \frac{1}{x^2+1} dx =$ _____ + C.

(A) $\sin^{-1} x$

(B) $\cos^{-1} x$

(C) $\tan^{-1} x$ ✓

(D) $\cot^{-1} x$

25. $\int \frac{1}{\sqrt{x^2-a^2}} dx =$ _____ + C.

(A) $\log|x + \sqrt{x^2 - a^2}|$ ✓

(B) $\cos^{-1} \frac{x}{a}$

(C) $\sin^{-1} \frac{x}{a}$

(D) $\log|a + \sqrt{x^2 - a^2}|$

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