

O. P. JINDAL SCHOOL, SAVITRI NAGAR**Weekly Test -1 (2025 – 2026)****Class : XII****Subject: Mathematics****Max Marks : 20****Time: 1 Hour****General Instructions:**

- (i) All the questions are compulsory.
- (ii) The question paper consists of 13 questions divided into 3 sections. Section A has 8 questions of 1 mark each, section B has 3 questions of 2 marks and section C has 2 questions of 3 marks each.
- (iii) There is no overall choice. However, internal choice has been provided in 2 questions. You have to attempt only one of the alternatives in all such questions.

Section - A

- Evaluate : $\int_{-\pi/2}^{\pi/2} |\sin x| dx$
 (a) 0 (b) -2
 (c) 2 (d) 1
- Evaluate: $\int_0^{\pi/2} \frac{\sqrt{\cos x}}{\sqrt{\cos x} + \sqrt{\sin x}} dx$
 (a) $\frac{\pi}{2}$ (b) $\frac{\pi}{4}$
 (c) π (d) 0
- Evaluate: $\int \frac{e^x}{1+e^{2x}} dx$
 (a) $\tan^{-1} e^x + C$ (b) $\log(1 + e^{2x}) + C$
 (c) $\tan^{-1} e^{2x} + C$ (d) None of these
- Evaluate: $\int \left(\frac{1}{x} - \frac{1}{x^2} \right) e^x dx$
 (a) $\frac{1}{x} e^x + C$ (b) $\log \frac{1}{x} e^x + C$
 (c) $\frac{1}{x^2} e^x + C$ (d) $-\frac{1}{x} e^x + C$
- The derivative $y = \log(\cos e^x)$ w.r.t. x is:
 (a) $\tan e^x$ (b) $e^x \tan e^x$
 (c) $-e^x \tan e^x$ (d) $-\tan e^x$
- If $x = a(1 - \cos \theta)$, $y = a(\theta - \sin \theta)$, then value of $\frac{dy}{dx}$ at $\theta = \frac{\pi}{2}$ is :
 (a) $\frac{1}{2}$ (b) -1
 (c) 1 (d) 0
- Evaluate: $\int \frac{\sin^2 x dx}{1 + \cos x}$
 (a) $x + \sin x + C$ (b) $\log(1 + \cos x) + C$
 (c) $x - \sin x + C$ (d) $x - \cos x + C$
- Evaluate: $\int \cos x e^{\sin x} dx$
 (a) $e^{\sin x} + C$ (b) $e^{\cos x} + C$
 (c) $\sin x e^{\cos x} + C$ (d) $-e^{\sin x} + C$

Section - B

9. If $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$, find $\frac{dy}{dx}$.

10. Evaluate: $\int_{-5}^5 |x+2| dx$

11. Evaluate: $\int \frac{\sec x dx}{\log(\sec x + \tan x)}$

OR

Evaluate : $\int \frac{\sin^{-1}x}{\sqrt{1-x^2}} dx$

Section - C

12. If $y = \sin^{-1}x$, prove that :

$$(1-x^2) \frac{d^2y}{dx^2} - x \frac{dy}{dx} = 0$$

13. Evaluate: $\int \frac{3x-1}{(x-1)(x-2)(x-3)} dx$

OR

Evaluate: $\int_0^{\frac{\pi}{4}} \frac{\sin x + \cos x}{9+16\sin 2x} dx$

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