

Date Planned ://	Daily Tutorial Sheet - 7	Expected Duration: 90 Min
Actual Date of Attempt ://	Level - 1	Exact Duration :

Let f(x) be a function defined by $f(x) = \int_1^x x(x^2 - 3x + 2) dx$, $1 \le x \le 3$. Then the range of f(x) is: 91.

(A)

(B) $\left[-\frac{1}{4}, 4 \right]$ **(C)** $\left[-\frac{1}{4}, 2 \right]$

(D)

The equation of the tangent to the curve $y = \int_{x^2}^{x^3} \frac{dt}{\sqrt{1+t^2}}$ at x = 1 is : 92.

> $\sqrt{2}y + 1 = x$ (A)

(B)

 $\sqrt{3}x + 1 + \sqrt{3} = v$

(D) None of these

The value of $\int_0^{\sin^2 x} \sin^{-1} \sqrt{t} \, dt + \int_0^{\cos^2 x} \cos^{-1} \sqrt{t} \, dt$ is : 93.

(A)

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

(D) None of these

 $\int_{-\infty}^{1/2} \sqrt{\left(\frac{x+1}{x-1}\right)^2 + \left(\frac{x-1}{x+1}\right)^2} - 2 dx, \text{ equal to:}$

(A) $4 \ln \left(\frac{2}{3}\right)$ (B) $2 \ln \left(\frac{2}{3}\right)$ (C) $\ln \left(\frac{4}{3}\right)$ (D) $4 \ln \left(\frac{4}{3}\right)$

Let $f(x) = ax^2 + bx + c$, where $a \in \mathbb{R}^+$ and $b^2 - 4ac < 0$. Area bounded by y = f(x), x-axis and the lines 95. x = 0, x = 1, is equal to :

(A) $\frac{1}{4}(3 f(1) + f(-1) + 2 f(0))$

(B) $\frac{1}{12}(5 f(1) + f(-1) + 8 f(0))$

(C) $\frac{1}{6}(3 f(1) - f(-1) + 2 f(0))$

(D) $\frac{1}{12}(5 f(1) - f(-1) + 8 f(0))$

For $x \in R$ and a continuous function f, let $I_1 = \int_{0}^{1+\cos^2 t} x f(x(2-x))dx$ and $I_2 = \int_{0}^{1+\cos^2 t} f(x(2-x))dx$. 95.

Then I_1/I_2 is:

(A) 0 (B)

(C)

(D) 3

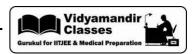
 $\int_{-\infty}^{\infty} \min(x - [x], -x - [-x]) dx \text{ equals, where } [x] \text{ represents greatest integer less than or equal to } x :$

(A)

(B)

(C)

(D) 0



- Area bounded by the curves $y = \tan x$, and $y = \tan^2 x$ in between $x \in \left(-\frac{\pi}{3}, \frac{\pi}{3}\right)$ is equal to : 98.
 - (A) $\frac{1}{2}(\pi + \ln 2 2)$ sq. units
- **(B)** $\frac{1}{3}(\pi + \ln(2\sqrt{2} 3))$ sq. units
- $\left(\frac{-\pi}{6} + \ln 2 + 2\sqrt{3} 2\right)$ sq. units
- **(D)** $\frac{1}{2}(\pi + \ln 4 2)$ sq. units
- The area of the loop of the curve $x^2 + (y-1)y^2 = 0$ is equal to: 99.
- 8/15 sq. units **(B)** 15/8 sq. units **(C)** 4/15 sq. units **(D)**
- The region bounded by the curves $x^2 = y$, y = x + 2 and x-axis has the area enclosed by them is: 100.
 - (A)
- (C) $\frac{4}{7}$
- The area inside the parabola $5x^2 y = 0$ but outside the parabola $2x^2 y + 9 = 0$ is: 101.
 - (A) $9\sqrt{3}$
- (B)

- The area bounded by the x-axis; part of the curve $y = \left(1 + \frac{8}{x^2}\right)$ and the ordinates at x = 2 and x = 4. If the 102.
 - ordinate at x = a divides the area into two parts, then the value of 'a' is:
 - (A) $\sqrt{2}$
- (B) $3\sqrt{2}$
- (C) $4\sqrt{2}$
- (D) $2\sqrt{2}$
- The area included between the parabolas $y^2 = 4a(x+a)$ and $y^2 = 4b(b-x)$ is: 103.
 - $\sqrt{ab}(a-b)$ (A)
- **(B)** $\frac{8}{3}\sqrt{ab}(a+b)$ **(C)** $2\sqrt{ab}$
- (D) None of these
- Find the area bounded by the curve $y = 2x x^2$ and the straight line y = -x. 104.
- (B)
- (C)
- (D) None of these

- If $y = \int_0^x \sqrt{\sin x} \, dx$ the value of $\frac{dy}{dx}$ at $x = \frac{\pi}{2}$ is:
 - (A)
- (B)
- (C) -1
- (D) None of these