

Q.1 The value of integral  $\int_{\frac{1}{2}}^{\frac{\sqrt{3}}{2}} \frac{6}{\sqrt{1-t^2}} dt$  is

(a)  $\frac{1}{7}$

(b)  $-3$

(c)  $\pi$

(d)  $9$

(e)  $\frac{4}{5}$

Q.2 The integral  $\int \frac{1}{1+\sin x} dx$  is equal to

(a)  $\sec x - \tan x + C$

(b)  $\tan x - \sec x + C$

(c)  $\frac{1}{2} \tan x - \csc x + C$

(d)  $\cot x + \csc x + C$

(e)  $\csc x + \tan x + C$

Q.1 The value of integral  $\int_0^{\frac{3\pi}{4}} |\cos x| dx$  is

(a)  $\pi$

(b) 2

(c)  $-\frac{1}{3}$

(d)  $\frac{5}{7}$

(e)   $2 - \frac{1}{\sqrt{2}}$

Q.2. By recognizing the sum as a Riemann sum for a function defined on  $[0, 1]$ , the value of  $\lim_{n \rightarrow \infty} \frac{1}{n} (\sqrt{\frac{1}{n}} + \sqrt{\frac{2}{n}} + \sqrt{\frac{3}{n}} + \dots + \sqrt{\frac{n}{n}})$  is

(a) 0

(b) -3

(c)   $\frac{2}{3}$

(d)  $\sqrt{5}$

(e) 1

Q.1 For  $g(x) = \int_2^x \sqrt{3t^2 + 1} dt$ ,  $g''(2)$  is equal to

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

(b) 12

(c) -1

(d)  $\frac{6}{\sqrt{13}}$

(e) 0

Q.2 The value of integral  $\int_1^{64} \frac{1 + \sqrt[3]{x}}{\sqrt{x}} dx$  is

(a)  $\frac{2}{9}$

(b)  $\frac{256}{5}$

(c) 0

(d) -4

(e) 5

Q.1 The interval on which  $y = \int_4^x \frac{1}{1+t+t^2} dt$

is concave upward is

(a)  $(-\infty, 0)$

(b)   $(-\infty, -\frac{1}{2})$

(c)  $(1, \infty)$

(d)  $(0, 2)$

(e)  $(-1, 4)$

Q.2. The velocity of a moving particle is given by the function  $v(t) = t^2 - 2t - 8$  (m/sec). If  $1 \leq t \leq 2$ , then displacement is equal to

(a) 4

(b)  $\frac{2}{3}$

(c) 5

(d) 0

(e)   $-\frac{26}{3}$