ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

FOR GOD AND COUNTRY

SOLUTIONS OF WORKSHEET-29

SUBJECT – MATHEMATICS

Final - Term

Chapter: Calculus **Class: XII**

Topic: Miscellaneous **Date: 16.01.2021**

Choose the correct option **(1 x 15=15)**

1. $\int e^{5\log x}\,dx$ = ?
   a) $\frac{e^{5\log x}}{5}$
   b) $\frac{e^{5\log x}}{5\log x}+c$
   c) $\frac{x^5}{5}+c$
   d) $\frac{x^6}{6}+c$

2. If $\int \frac{dx}{x^2-a^2} = k\log\left|\frac{x-a}{x+a}\right| + c$, then the value of k is –
   a) $\frac{1}{a}$
   b) $\frac{1}{2a}$
   c) $2a$
   d) None of these.

3. $\int \sin x^\circ\,dx$ is –
   a) $\frac{\pi}{180}\cos x^\circ + c$
   b) $\frac{180}{\pi}\cos x^\circ + c$
   c) $-\frac{180}{\pi}\cos x^\circ + c$
   d) $-\frac{\pi}{180}\cos x^\circ + c$

4. The value of $\int 2^{3x} dx$ = ?

a) $\frac{2^x}{3\log 2}$

b) $\frac{2^{3x}}{3\log 2} + c$

c) $\frac{3\times 2^{3x}}{\log 2} + c$

d) $3\log 2 \times 2^{3x} + c$

5. The value of $\lim_{x\to 2} \frac{\log(2x-3)}{2(x-2)} = ?$

a) $\frac{1}{4}\log_a e$, b) 1 , c) $\frac{1}{2}$, d) $\log_a e$

6. The value of $\lim_{x\to\infty} x^{\frac{3}{2}} (\sqrt{x^3+1} - \sqrt{x^3-1}) = ?$

a) 1 , b) 0 , c) e , d) -1

7. The value of $\lim_{x\to 0}(1+4x)^{\frac{x+2}{x}} = ?$

a) 1 , b) 0 , c) e^8 , d) Doesn't exit.

8. The value of $\lim_{x\to 0} \frac{e^{x^2}-1}{x} = ?$

a) 1 , b) 0 , c) e^{-1} , d) Doesn't exit.

9. **The value of** $\lim_{x\to 1}\frac{\log x}{x-1} = ?$

a) 1 , b) 0 , c) e , d) -1

10. **The value of** $\lim_{x\to 0}\frac{\log(1+4x)}{3x} = ?$

a) 4 , b) 3 , c) $\frac{4}{3}$ **, d)** $\frac{1}{12}$

11. **The function** $f(x) = |x|$ ***is*** $-$

a) **Continuous at all real values of x**
b) **Discontinuous at x=0**
c) **Continuous only at x=0**
d) **None of these.**

12. **The function** $f(x) = x - [x]$ **, where** $[.]$ **denotes the greatest integer function, is -**

a) **Continuous everywhere.**
b) **Continuous only at non-integral values of x.**
c) **Continuous at all integral values of x.**
d) **Differentiable everywhere.**

13. **The set of points where the function** $f(x)$ **given by** $f(x) = |x-3|\cos x$ **is differentiable , is –**

a) $\mathbb{R}$
b) $\mathbb{R} - \{3\}$
c) $(0, \infty)$
d) **None of these.**

14. **Let the function $f(x) = |x|$.Then at $x = 0$ the function is –**

a) **Not Continuous .**
b) **Continuous but not differentiable**
c) **Differentiable but not Continuous**
d) **Differentiable and Continuous.**

15. **The point of discontinuities of the function $f(x) = \frac{x+2}{2x^2-x-1}$ are -**

a) $\frac{1}{2}, -1$, b) $-\frac{1}{2}, -1$, c) $-\frac{1}{2}, 1$, d) $\frac{1}{2}, 1$

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