



ST. LAWRENCE HIGH SCHOOL
A JESUIT CHRISTIAN MINORITY INSTITUTION



Solutions of worksheet-9

SUBJECT – MATHEMATICS

Pre-test

Chapter: Differentiation

Class: XII

Topic: Differentiation

Date: 16.06.2020

Choose the correct option

(1 X 15= 15)

1. The function

$$f'(x) = \lim_{h \rightarrow ?} \frac{f(x+h) - f(x)}{h}$$

is called derivative with respect to x, if the limit h

- A. $h \rightarrow 0$
- B. $h \rightarrow -\infty$
- C. $h \rightarrow \infty$
- D. $h \rightarrow \mathbb{Z}$; where $\mathbb{Z}$ is an integer

2. If $y = \frac{4}{x^2} + \sqrt{x} - \frac{1}{\sqrt{x}}$ then $y' = ?$

- A. $\frac{8}{x^3} + \frac{2}{\sqrt{x}} + \frac{2}{x^{3/2}}$
- B. $-\frac{8}{x^3} + \frac{1}{2\sqrt{x}} + \frac{1}{2x^{3/2}}$
- C. $-\frac{8}{x^3} + 2\sqrt{x} + 2x^{3/2}$
- D. None of these

3. If $f(x) = x^3 - 2x + 10$, then $f'(2) = ?$

- A. 10
- B. 12
- C. 14
- D. 16

4. If $y = 4^x$, then $y' = ?$

- A. $x \cdot \ln 4$
- B. $4 \cdot \ln x$
- C. $4^x \ln 4$
- D. $4^x \ln x$

5. If $y = \sqrt{x+1}$, then $y' = ?$

- A. $2\sqrt{x+1}$
- B. $\frac{2}{\sqrt{x+1}}$
- C. $\frac{1}{\sqrt{x+1}}$
- D. $\frac{1}{2\sqrt{x+1}}$

6. If $x^2 + 2xy = y^2$, then $\frac{dy}{dx}$ is

- (A) $\frac{x+y}{y-x}$
- (B) $2x+2y$
- (C) $\frac{x+1}{y}$
- (D) $-x$

7. The derivative of $\sec(2x)$ is ?

- (A) $\sec(x)\tan(x)$
- (B) $\sec(2x)\tan(2x)$
- (C) $2\sec(2x)\tan(2x)$
- (D) $4\sec(2x)\tan(2x)$

8. If $y = \sin(2\pi)$, then $\frac{dy}{dx} = ?$

- A. 0
- B. π
- C. 2π
- D. $\cos(2\pi)$

9. $\frac{d}{dx}(e^{3x^2}) = ?$

- A. e^x
- B. e^{3x^2}
- C. $6xe^{3x^2}$
- D. $6e^{3x^2}$

10. If $y = \ln(e^x \cdot \ln x)$, then $y' = ?$

- A. 1
- B. $1 + \frac{1}{x}$
- C. $\frac{1}{x}e^x$
- D. $\ln e^x$

11. If $y = x^{\sin x}$, then $y' = ?$

- A. $x^{\sin x} \left[\frac{\sin x}{x} + \ln x \cos x \right]$
- B. $x^{\sin x} \left[\frac{\cos x}{x} + \ln x \sin x \right]$
- C. $x^{\sin x} [1 + \ln x \cos x]$
- D. $x^{\sin x} [1 + \ln x \sin x]$

12. If $y = \ln e^{x^2}$, then $y' = ?$

A. $\ln x$

B. $\frac{1}{e^{x^2}}$

C. $2x$

D. $\frac{1}{2x}$

13. $\frac{d}{dx} [\cot(x^2 + 1)] = ?$

A. $2x \cos ec^2(x^2 + 1)$

B. $-2x \cos ec^2(x^2 + 1)$

C. $\sec^2(x^2 + 1)$

D. $-\sec^2(x^2 + 1)$

14. If $f(x) = x \cos x$, then $f'(0) = ?$

A. -1

B. 0

C. 1

D. ∞

15. If $f(x) = x \sin x$, then $f'(0) = ?$

A. -1

B. 0

C. 1

D. ∞

ANSWERS:-

1. A

2. B

3. A

4. C

5. D

6. A

7. C

8. A

9. C

10. B

11. A

12. C

13. B

14. C

15. B