ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

FOR GOD AND COUNTRY

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

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

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

A. $h\to 0$

B. $h\to -\infty$

C. $h\to \infty$

D. $h\to \mathbb{Z}$; 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. $\dfrac{2}{\sqrt{x+1}}$

C. $\dfrac{1}{\sqrt{x+1}}$

D. $\dfrac{1}{2\sqrt{x+1}}$

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

(A) $\dfrac{x+y}{y-x}$

(B) $2x+2y$

(C) $\dfrac{x+1}{y}$

(D) $-x$

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

(A) $sec(x)tan(x)$

(B) $sec(2x)tan(2x)$

(C) $2sec(2x)tan(2x)$

(D) $4sec(2x)tan(2x)$

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

A. 0

B. π

C. 2π

D. $\cos(2\pi)$

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

A. e^x

B. e^{3x^2}

C. $6xe^{3x^2}$

D. $6e^{3x^2}$

10. If $y = \ln\left(e^x \cdot \ln x\right)$, 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. $x^{\sin x}\left[1 + \ln x \cos x\right]$

D. $x^{\sin x}\left[1 + \ln x \sin x\right]$

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

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

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

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

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

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. ∞

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