

CH:-DERIVATIVES(BASIC) CLASS XII

WORKSHEET

Choose the most appropriate options for the following questions.

1. The set of points where the function $f(x) = |2x-1|\sin x$ is differentiable is

(a) \mathbb{R}

(b) $\mathbb{R} - \left(\frac{1}{2}\right)$

(c) $(0,1)$

(d) None of these

2. The double differentiation of y wrt x where $x = a(\cos t + t \sin t)$ and $y = a(\sin t - \cos t)$ is

(a) $\sec^3 t / at$

(b) $\operatorname{cosec} t$

(c) $a \sin t$

(d) $a \cos t + \sin t$

3. The derivative of x^{-8}

(a) $-8x^{-9}$

(b) $-8x^{-7}$

(c) $8x^8$

(d) $9x^8$

4. The derivative of the function $f(x) = x(x-10)$ is

(a) $x^2 - 10$

(b) $2x - 10$

(c) $2x^2 + 0$

(d) $x^2 - 10x$

5. Differentiating $\sec(2x+3)$

wrt x we get

(a) $\sec(2x+3) + \tan(2x+3)$

(b) $\sec^2(2x+3)$

(c) $2\sec(2x+3)\tan(2x+3)$

(d) none of these

6. Which of the following function has its value equal to value of its first derivative

(a) x

(b) 0

(c) e^x

(d) Both c and d

7. dy/dx of $\log x$

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

(b) $x^{-\log x}$

(c) x^2

(d) $\log x$

8. The function $f(x) = e^{|x|}$ is not differentiable at $x =$

(a) 0

(b) 1

(c) -1

(d) none

9. The derivative of $\cos^{-1}(2x^2 - 1)$ w.r.t x is

(a) 2

(b) $\frac{1}{2\sqrt{1-x^2}}$

(c) $2/x$

(d) $1 - x^2$

10. If $x = a(\phi + \sin\phi)$, $y = a(1 - \cos\phi)$, at $\phi = \frac{\pi}{2}$

(a) 0

(b) $\sqrt{3}$

(c) $1/\sqrt{3}$

(d) 1

Fill in the blanks:-

11. For the curve $\sqrt{x} + \sqrt{y} = 1$, $\frac{dy}{dx}$ at $(\frac{1}{4}, \frac{1}{4})$ is.....

12. If $f(x) = |\cos x - \sin x|$, then $\frac{dy}{dx}$ at $x = \pi/3$

13. Derivative of x^2 wrt x^3 is.....

14. Trigonometric and inverse trigonometric functions are differentiable in their respective

15. The function $f(x) = \cot x$ is discontinuous at.....

Find the derivative of following functions w.r.t x.

16. $a \sin x + b \cos x$

17. $x / \sin x$

18. $\tan^{-1} 1 + x^2$

19. $14x^{10} + 5x^6 + 29$

20. $\cot x + \sin x^2$

21. $10\sqrt{x} + 12$

22. $\sqrt[3]{5x} + 9$

23. $\operatorname{cosec} \sqrt[4]{x}$

24. $\sin x * \cos x + \tan x * \sec$

25. $\cos^{-1} 1 + x^2 + x$

26. $\tan x / \operatorname{cosec} x$

27. $4x \operatorname{cosec} x + 9x^5 + 77 \cot x$

Answer the following:-

28. Find the slope to the tangent to the curve $y = 3x^4 - 4x$ at $x = 4$.

29. Differentiate $\sin x^2$ w.r.t x^2 .

30. Differentiate $\sqrt{\tan \sqrt{x}}$ w.r.t x .
