



Sri Raghavendra Tuition Center

Differential Calculus - Differentiability And Methods Of Differentiation

11th Standard

Maths

Date : 11-09-24

Reg.No. :

Exam Time : 01:30 Hrs

Total Marks : 50

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Centum Book Available

I. Answer any 8 question

8 x 2 = 16

- 1) Differentiate the following with respect to x : $y = x^3 + 5x^2 + 3x + 7$
- 2) Differentiate the following: $y = \cos (\tan x)$
- 3) Find $F'(x)$ if $F(x) = \sqrt{x^2 + 1}$
- 4) Differentiate : $y = (x^3 - 1)^{100}$
- 5) Find $f'(x)$ if $f(x) = \frac{1}{3\sqrt{x^2+x+1}}$
- 6) Differentiate the following: $y = \tan 3x$
- 7) Differentiate : $y = e^{\sin x}$.
- 8) Differentiate the following: $y = \sin(e^x)$
- 9) Differentiate the following: $y = \frac{e^{3x}}{1+e^x}$
- 10) Differentiate $f(x) = x - 3\sin x$ with respect to x .

II. Answer any 10 question

8 x 3 = 24

- 11) Differentiate the following with respect to x : $y = \frac{\cos x}{x^3}$
- 12) Differentiate the following with respect to x : $y = xe^x \log x$
- 13) Differentiate the following with respect to x : $y = \frac{\log x}{e^x}$
- 14) Find the derivatives of the following functions with respect to corresponding independent variables: $y = \operatorname{cosec} x \cdot \cot x$
- 15) Differentiate the following: $y = \sin^2(\cos kx)$
- 16) Differentiate the following: $y = \frac{\sin^2 x}{\cos x}$
- 17) Differentiate the following: $y = e^{-mx}$
- 18) Differentiate the following: $y = 5^{-\frac{1}{x}}$
- 19) Differentiate the following: $y = \sqrt{1 + 2 \tan x}$
- 20) Differentiate the following: $y = \sin^3 x + \cos^3 x$
- 21) Find the second derivative of $\log(\log x)$ with respect to x .
- 22) Differentiate $y = \tan^2 4x$ with respect to x .

III. Answer all question

2 x 5 = 10

23) a) Differentiate the following : $y = (2x - 5)^4(8x^2 - 5)^{-3}$

(OR)

b) Differentiate the following : $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$.

(OR)

c) Differentiate the following: $y = ye^{-x^2}$

(OR)

d) Differentiate the following: $y = e^{x\cos x}$

24) a) Differentiate the following: $y = \tan(\cos x)$

(OR)

b) Differentiate: $y = \sin(\tan(\sqrt{\sin x}))$

(OR)

c) Differentiate the following : $s(t) = \sqrt[4]{\frac{t^3+1}{t^3-1}}$

(OR)

d) Differentiate the following : $y = \sqrt{x + \sqrt{x + \sqrt{x}}}$

All the best
