

WRITE COMMANDS FOR FOLLOWING USING MATLAB

I. Evaluate: $\frac{dy}{dx}$ & $\frac{d^2y}{dx^2}$ *for* :

1. $\frac{1}{x}$
2. $e^x + \frac{3}{\sqrt{x}} + \tan x$
3. $x^{\frac{3}{2}} + 5 \cos x$
4. e^{x^2-2x}
5. $\log(x^2)$
6. $\tan(5x^7 + 3x^4)$
7. $\sinh(x^2 + 3x)$
8. $\log(\cos x)$
9. $e^{-xt} \cos(wt)$
10. $\frac{1-e^{-x/5}}{5}$
11. $\frac{1}{2} \log[\cosh \sqrt{20} t]$
12. $\frac{\cos x}{1+\sin x}$
13. $5t e^{-5t}$

II. Find $\frac{dy}{dx}$ & $\frac{d^2y}{dx^2}$ *for*

1. $x=(t-3)^2, y=t^3 - 1$
- 2.
3. $x=\sin t, y = \cos t$
4. $x=e^{t-1}, y = e^{t/2}$
5. $x=r(\theta - \sin \theta), y = r(1 - \cos \theta)$
6. $x^3 + y^3 - 2x = 3$
7. $\log y = \log(x-a) - \log x^2$
8. $e^{x+y} + \sin x = 0$
9. $y = x^{\sin x}$
10. $y = \frac{e^{x(x^2+1)}}{\sin x}$
11. $\log(e+y) = e^{\sin(x+y)}$

III. Partial Difference

Find $\frac{\partial f}{\partial x}$ & $\frac{\partial f}{\partial y}$, $\frac{\partial^2 f}{\partial x^2}$, $\frac{\partial^2 f}{\partial y^2}$ & $\frac{\partial^2 f}{\partial x \partial y}$ *for*

1. $x^2 + 2xy + y^2$

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2. $x^{3+} y^2 \cos x$

3. $.3x^2 - \sin x y^2$

4. $\log(x^2 + y^2)$

5. $\cos(xy)$

6. $2y - \frac{1}{x}$

7. $\frac{1}{2}\log(x^2 + y^2)$

8. $\frac{1}{2x\sqrt{xy}}$

IV. Integration: Evaluate the following equations.

1. $\int_0^1 \frac{2}{\sqrt{x}} dx$

2. $\int_0^1 e^{5x+3} dx$

3. $\int_0^{\pi/2} \tanh x$

4. $\int_1^2 \frac{3x^2 dx}{x^3-5}$

5. $\int_0^2 (x^2 - 2x) dx$

6. $\int_0^t 1/\cos(wt + \theta) dt$

7. $\int_0^1 x \sqrt{1+x} dx$

8. $\int_0^2 e^{-2t} (t^2 - 2t) dt$

9. $\int_1^3 t \cos t dt$

10. $\int_0^3 mx^2 \sin^2 \theta d\theta$