Session 8: Differentiation Practice - Logarithmic Functions

November 8, 2024

Differentiate the following functions:

1. $y = 10^x$
2. $y = 2^{x^2+3x}$
3. $y = 5^{\sin(x)}$
4. $y = e^{2x} + 10^{3x}$
5. $y = x^2 \cdot 3^x$
6. $y = \frac{2^x}{x+1}$
7. $y = 7^{\sqrt{x^2+1}}$
8. $y = \log_{10}(2^x)$
9. $y = 3^{x^3+2x} \cdot 5^{x^2-1}$
10. $y = (\sin(x))^{2^x}$ (Hint: Use logarithmic differentiation)
11. $y = \ln(x^2 + 1)$
12. $y = \log_2(5x^3 - 2x)$
13. $y = x^2 \ln(x)$
14. $y = \frac{\ln(x)}{x+1}$
15. $y = \ln(\sin(x))$
16. $y = \ln(\sqrt{x^2 + 4})$
17. $y = e^x \ln(x)$
18. $y = \ln(x^3 + 3x^2 + 3x + 1)$
19. $y = \ln(\sec(x) + \tan(x))$

20. $y = \ln|\ln(x)|$
21. $y = \sqrt{\ln(x)}$
22. $y = \ln(\arctan(x))$
23. $y = x\ln(x) - x$
24. $y = \ln(x^2 + 2x + 1)$
25. $y = [\ln(x)]^{\sin(x)}$ (Hint: Use logarithmic differentiation)