

Exercises 7.3

In Exercises 1-24, find dy/dx .

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|--------------------------------|--------------------------------|
| 1. $y = x^x$ | 2. $y = x^{1+\sqrt{2}}$ |
| 3. $y = x^{-\sqrt{2}}$ | 4. $y = x^{1-e}$ |
| 5. $y = 8^x$ | 6. $y = 9^{-x}$ |
| 7. $y = 3^{\csc x}$ | 8. $y = 3^{\cot x}$ |
| 9. $y = x^{\ln x}, x > 0$ | 10. $y = x^{(1/\ln x)}$ |
| 11. $y = (x+1)^x$ | 12. $y = (x+2)^{x+2}$ |
| 13. $y = x^{\sin x}$ | 14. $y = (\sin x)^{\tan x}$ |
| 15. $y = \log_4 x^2$ | 16. $y = \log_5 \sqrt{x}$ |
| 17. $y = \log_2(3x+1)$ | 18. $y = \log_{10} \sqrt{x+1}$ |
| 19. $y = \log_2(1/x)$ | 20. $y = 1/\log_2 x$ |
| 21. $y = \ln 2 \cdot \log_2 x$ | 22. $y = \log_3(1+x \ln 3)$ |
| 23. $y = \log_{10} e^x$ | 24. $y = \ln 10^x$ |

Evaluate the integrals in Exercises 25-40 analytically and with an NINT computation.

25. $\int_0^1 3x\sqrt{3} dx$

26. $\int_0^1 x\sqrt{x} dx$

39. $\int_0^9 \frac{2 \log_{10}(x+1)}{x+1} dx$

40. $\int_2^3 \frac{2 \log_2(x-1)}{x-1} dx$

41. $\int \frac{3\sqrt{x}}{\sqrt{x}} dx$

27. $\int_0^1 5^x dx$

28. $\int_1^e x^{\ln 2 - 1} dx$

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

30. $\int_{-1}^1 2^{(x+1)} dx$

31. $\int_{-1}^0 4^{-x} \ln 2 dx$

32. $\int_{-2}^0 5^{-x} dx$

33. $\int_1^{\sqrt{2}} x 2^{x^2} dx$

34. $\int_0^{\pi/2} 2^{\cos x} \sin x dx$

35. $\int_1^{10} \frac{\log_{10} x}{x} dx$

36. $\int_1^4 \frac{\log_2 x}{x} dx$

37. $\int_0^2 \frac{\log_2(x+2)}{x+2} dx$

38. $\int_{1/10}^{10} \frac{\log_{10}(10x)}{x} dx$