Dylan's Dozen (or so) Derivatives for the Diligent Disciple

1. $f(x) = x^{\frac{1}{2}}$

2. $y = (2x)^{\frac{3}{2}}$

3. $f(x) = 3x^{\frac{2}{3}}$

4. $f(x) = (9x)^{\frac{1}{3}}$

5. $y = 2\sqrt{x}$

6. $y = -\sqrt[3]{x}$

7. $y = \sqrt{4x}$

8. $f(x) = \sqrt[5]{4x^4}$

9. $f(x) = -17(3x^3 - 4x^2 + 2)$

10. $f(x) = 3(4x^3 + \frac{2}{3x^2})$

11. $y = -\dfrac{5x^4 + 3x^3}{7}$

12. $f(x) = \dfrac{3x^2 - 2x - \frac{18}{x^3}}{2}$

13. $f(x) = 2x^2\sqrt{x}$

14. $y = -5x^5\sqrt{x}$

15. $y = 4x^2\sqrt{x} + 4\sqrt{x}$

16. $f(x) = (4x^2 - 4x)\sqrt{x}$

17. $f(x) = \dfrac{5}{x - 3}$

18. $f(x) = \dfrac{3}{x^2 + 3x}$

19. $y = -\dfrac{18}{5x^3 + 2x^2}$

20. $y = -\dfrac{4x}{2x^3 - 4x}$

21. $y = \dfrac{4x^3 + 2x^2 + 3x}{4x}$

22. $f(x) = -\dfrac{2x^2 + 4x - 7}{8x^3}$

23. $f(x) = -\dfrac{2x^2 + 13x + 12}{2x + 5}$

24. $y = \dfrac{28x^3 + 16x^2 - 21x - 12}{4x^2 - 3}$

25. $f(x) = \dfrac{1}{\sqrt{x}}$

26. $f(x) = -\dfrac{3}{x\sqrt{x}}$

27. $y = -\dfrac{1}{\sqrt{1 - x^2}}$

28. $f(x) = \dfrac{15}{\sqrt[3]{x^3 + 2x}}$

29. $f(x) = \dfrac{2}{4 + \sqrt{x}}$

30. $y = -\dfrac{1}{4 - 3\sqrt{x}}$

31. $y = \dfrac{1}{x\sqrt{x} + x^2}$

32. $y = \dfrac{8}{2x^3 - 7\sqrt{x^3}}$

33. $f(x) = e^{x^2 - 3}$

34. $f(x) = -e^{4x^3}$

35. $y = 2^{\frac{1}{x^2}}$

36. $f(x) = 3^{\frac{2}{x}}$

37. $f(x) = -e^{\sqrt{x}}$

38. $y = 3^{-x\sqrt{x}}$

39. $f(x) = -\sqrt{e^{-x}}$

40. $y = \sqrt[3]{e^{2x}}$

41. $f(x) = 4^{x^3 + 2x}$

42. $f(x) = (e^{-3x})^{4x}$

43. $f(x) = -4(4e^{4x^3} + 3x^2)^2$

44. $f(x) = -e^{e^x}$

45. $f(x) = -(4x^2 + 2x)e^{3x}$

46. $y = 72x^2e^x + 81xe^x$

47. $y = -e^{3x}(3e^x + 4x^5)$

48. $y = 4x^2(e^{-(2x^2+4)} - 15x^3 + 2x)$

49. $f(x) = (9x^6 + 7)e^{-x}$

50. $f(x) = -(x^5 - 12x^3)e^{-4x}$

51. $f(x) = -\dfrac{3x^3 - 2x}{e^x}$

52. $y = \dfrac{4x^2 + 18x}{8e^{2x}}$

53. $f(x) = \ln(4x^3)$

54. $y = -3\ln(2x^2 + 3x)$

55. $y = \log_{10}(5x^3 + 3x^{-2})$

56. $f(x) = \log_2\left(8x^7 + \dfrac{3x^3}{19}\right)$

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