

Compute $\frac{dy}{dx}$ in each of the following:

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

2. $y = (x^3 - 1)\sqrt{3x^2 + 4}$

3. $y = (x^2 + 1)^{37}(x^3 - 1)^{21}$

4. $\frac{x^2 + 1}{1 - 3x}$

5. $y = \frac{x^3}{\sqrt[3]{3x^2 - 1}}$

6. $y = \frac{10^x}{\ln(10x)}$

7. $y = \frac{(x^2 + 1)\sqrt{x^2 - 1}}{3x + 2}$

8. $y = \left(\frac{2x + 1}{3x - 1}\right)^4$

9. $y = \sqrt{1 - \frac{1}{x^2 + 1}}$

10. $y = \sqrt{x + \sqrt{x + \sqrt{x}}}$

11. $y = 2x^2 \sin^3(5x^8)$

12. $y = (\tan(x) - \cos(3x^2))^4$

13. $y = \sin(\cos(x)) + \sin(x) \cos(x)$

14. $y = x^2 \csc^5(\sqrt{x - 1})$

15. $y = \frac{1 - \cos(2x)}{\tan(x)}$

16. $y = 3 + \frac{5}{\sqrt{x}} + 2\sqrt{x} - \frac{1}{x\sqrt{x}}$

17. $y = \frac{1}{4x^3 + 5x^2 - 7x + 8}$

18. $y = \sqrt[3]{4 - x}$

19. $y = \ln(\tan(x))$

20. $y = \ln(x^2 + \ln(x + \ln(x)))$

21. $y = t^2 + 2$ and $t = \tan(x^2 - x)$

22. $y = 3^{3x^2}$

23. $y = \ln\left(\frac{x - 1}{x + 1}\right)$

24. $y = (x^2 + 4)^4(x^3 - 3)^{3/4}$

25. $y = 2\sqrt{4 \sin(x) - 6 \cos(2x)}$

26. $y = (e^{\sin(x)} - \sqrt{2x})(x^2 - 9)(\tan(x) - \cot(x))^4$