

Math 229 Practice – Differentiate

1. $y = x^2 + \frac{3}{x^2}$
2. $y = \frac{\sqrt{x}}{1 + \sqrt{x}}$
3. $y = \sqrt{x} + \frac{1}{\sqrt[3]{x}}$
4. $y = \sqrt{x} \sin x$
5. $y = (x - 1)^7(3x + 2)^9$
6. $y = \frac{1}{x + x^2 + x^3}$
7. $y = \left(3x - \frac{1}{2x^2}\right)^4$
8. $y = (x^{-2} + x^{-3})^{-1}$
9. $xy = 9$
10. $y = x^2 \sin x^2$
11. $y = \frac{1}{\sqrt{(x^3 - x)^3}}$
12. $y = \frac{1}{(x^4 + 4x^2)^3}$
13. $y = \frac{1}{1 + u^2}, \quad u = \frac{1}{1 + x^2}$
14. $y = \frac{3x - 7}{\sqrt{x^2 + 1}}$
15. $y = (\sqrt{x} + \sqrt[3]{2x})^{7/3}$
16. $y = ((x^2 + 1)^3 - 7)^5$
17. $y = \frac{u + 1}{u - 1}, \quad u = \sqrt{x + 1}$
18. $y = \tan^2 x \cot^5 x$
19. $x^2 y^2 = x + y$
20. $y = \frac{\sqrt{1 + \sin x}}{\cos x}$
21. $y = \sqrt{x + \sqrt{2x + \sqrt{3x}}}$
22. $y = (x + 1)(x^2 + 1)(x^3 + 1)$
23. $\sqrt[3]{x} + \sqrt[3]{y} = xy$
24. $y = (x^3 + 1)^2(x + 2)^4 \sin x$
25. $y = \sin(2 \cos 3x)$
26. $y = \left(\frac{x^3 - 8}{x^2 + 4}\right)^5$
27. $y = \sqrt{\frac{\sin^2 x}{1 + \cos x}}$
28. $y = x^2 - \frac{1}{x^2} + \frac{1}{x} - 2$
29. $y = \frac{\cos 2x}{\sqrt{\sin 3x}}$
30. $y = \tan 2x + \sec 3x$
31. $y = \sin^3 2x \cos^2 3x$
32. $y = x \tan \frac{1}{x}$
33. $y = \sin^5\left(x + \frac{1}{x}\right)$
34. $y = \frac{\sec^2 x}{1 + x^2}$
35. $y = \cos^3(\sqrt[3]{x^4 + 1})$
36. $y = \frac{1 + \sin x}{x \cos x}$
37. $y = x^2 + [x^3 + (x^4 + x)^2]^7$
38. $y = \frac{x\sqrt{3 + 2x}}{4x - 1}$
39. $\sin(x + y) + \sin(x - y) = 1$
40. $\tan x + \tan y = xy$