

Find the derivative of each of the following functions by using the quotient rule.

1.  $\frac{e^x}{(-\sin(x))}$
2.  $\frac{x^{2008}}{\cos(x)}$
3.  $\frac{x^{2008}}{(7x+1)}$
4.  $\frac{\cot(x)}{(10x^3+5)}$
5.  $\frac{(-\sin(x))}{e^x}$
6.  $\frac{x^{100}}{(-11x^2+5x+2)}$
7.  $\frac{\cos(x)}{(10x^3+5)}$
8.  $\frac{\sqrt[3]{x}}{(7x+1)}$
9.  $\frac{\cos(x)}{\sqrt[13]{x}}$
10.  $\frac{x^{100}}{(-\cos(x))}$
11.  $\frac{(-\cos(x))}{\sqrt[13]{x}}$
12.  $\frac{\sqrt[14]{x}}{(-11x^2+5x+2)}$
13.  $\frac{(-\sin(x))}{(7x+1)}$
14.  $\frac{\cos(x)}{(2x^{11})}$
15.  $\frac{\sqrt[5]{x}}{\cot(x)}$
16.  $\frac{(-\cos(x))}{(7x+1)}$
17.  $\frac{e^x}{\cos(x)}$
18.  $\frac{\sqrt{x}}{(-\cos(x))}$
19.  $\frac{(-\sin(x))}{\csc(x)}$
20.  $\frac{x^{2008}}{\tan(x)}$
21.  $\frac{x^{2008}}{(-\cos(x))}$
22.  $\frac{\cos(x)}{\tan(x)}$
23.  $\frac{\tan(x)}{\cos(x)}$
24.  $\frac{\sqrt[5]{x}}{\sin(x)}$
25.  $\frac{(-\sin(x))}{\sec(x)}$
26.  $\frac{\tan(x)}{\csc(x)}$
27.  $\frac{(-\cos(x))}{(-11x^2+5x+2)}$
28.  $\frac{x^{17}}{\sin(x)}$
29.  $\frac{e^x}{\csc(x)}$
30.  $\frac{\cos(x)}{e^x}$
31.  $\frac{\sqrt[14]{x}}{(2x^{11})}$
32.  $\frac{\sqrt[3]{x}}{\cos(x)}$
33.  $\frac{\sqrt[5]{x}}{\csc(x)}$
34.  $\frac{(-\sin(x))}{\cos(x)}$
35.  $\frac{x^{100}}{\sec(x)}$
36.  $\frac{x^{17}}{(-\cos(x))}$
37.  $\frac{\sqrt{x}}{\cot(x)}$
38.  $\frac{x^{17}}{e^x}$
39.  $\frac{\sqrt{x}}{\cos(x)}$
40.  $\frac{\tan(x)}{(2x^{11})}$
41.  $\frac{\sqrt[3]{x}}{\cot(x)}$
42.  $\frac{\sqrt[3]{x}}{(10x^3+5)}$
43.  $\frac{\tan(x)}{(-\cos(x))}$
44.  $\frac{\cot(x)}{e^x}$
45.  $\frac{\cot(x)}{\sec(x)}$
46.  $\frac{\sqrt{x}}{\sec(x)}$
47.  $\frac{\sin(x)}{(2x^{11})}$
48.  $\frac{x^{100}}{\sin(x)}$
49.  $\frac{\cos(x)}{\sin(x)}$
50.  $\frac{e^x}{\tan(x)}$
51.  $\frac{\sqrt[14]{x}}{(10x^3+5)}$
52.  $\frac{\sqrt{x}}{\tan(x)}$
53.  $\frac{\sqrt[14]{x}}{\cos(x)}$
54.  $\frac{\sin(x)}{e^x}$
55.  $\frac{\tan(x)}{(-11x^2+5x+2)}$
56.  $\frac{\sqrt{x}}{(-11x^2+5x+2)}$
57.  $\frac{\sqrt[3]{x}}{\sin(x)}$
58.  $\frac{\sqrt[14]{x}}{\cot(x)}$
59.  $\frac{\sqrt[3]{x}}{\csc(x)}$
60.  $\frac{(-\sin(x))}{(-11x^2+5x+2)}$

Solutions:

1.  $\frac{(-\sin(x))e^x - e^x(-\cos(x))}{(-\sin(x))^2}$
2.  $\frac{\cos(x)(2008x^{2007}) - x^{2008}(-\sin(x))}{(\cos(x))^2}$
3.  $\frac{(7x+1)(2008x^{2007}) - x^{2008}(7)}{(7x+1)^2}$
4.  $\frac{(10x^3+5)(-\csc^2(x)) - \cot(x)(30x^2)}{(10x^3+5)^2}$
5.  $\frac{e^x(-\cos(x)) - (-\sin(x))e^x}{(e^x)^2}$
6.  $\frac{(-11x^2+5x+2)(100x^{99}) - x^{100}(-22x+5)}{(-11x^2+5x+2)^2}$
7.  $\frac{(10x^3+5)(-\sin(x)) - \cos(x)(30x^2)}{(10x^3+5)^2}$
8.  $\frac{(7x+1)\left(\frac{1}{3\sqrt[3]{x^2}}\right) - \sqrt[3]{x}(7)}{(7x+1)^2}$
9.  $\frac{\sqrt[13]{x}(-\sin(x)) - \cos(x)\left(\frac{1}{13\sqrt[13]{x^{12}}}\right)}{(\sqrt[13]{x})^2}$
10.  $\frac{(-\cos(x))(100x^{99}) - x^{100}\sin(x)}{(-\cos(x))^2}$
11.  $\frac{\sqrt[13]{x}\sin(x) - (-\cos(x))\left(\frac{1}{13\sqrt[13]{x^{12}}}\right)}{(\sqrt[13]{x})^2}$
12.  $\frac{(-11x^2+5x+2)\left(\frac{1}{14\sqrt[14]{x^{13}}}\right) - \sqrt[14]{x}(-22x+5)}{(-11x^2+5x+2)^2}$
13.  $\frac{(7x+1)(-\cos(x)) - (-\sin(x))(7)}{(7x+1)^2}$
14.  $\frac{(2x^{11})(-\sin(x)) - \cos(x)(22x^{10})}{(2x^{11})^2}$
15.  $\frac{\cot(x)\left(\frac{1}{5\sqrt[5]{x^4}}\right) - \sqrt[5]{x}(-\csc^2(x))}{(\cot(x))^2}$
16.  $\frac{(7x+1)\sin(x) - (-\cos(x))(7)}{(7x+1)^2}$
17.  $\frac{\cos(x)e^x - e^x(-\sin(x))}{(\cos(x))^2}$
18.  $\frac{(-\cos(x))\left(\frac{1}{2\sqrt{x}}\right) - \sqrt{x}\sin(x)}{(-\cos(x))^2}$
19.  $\frac{\csc(x)(-\cos(x)) - (-\sin(x))(-\csc(x)\cot(x))}{(\csc(x))^2}$
20.  $\frac{\tan(x)(2008x^{2007}) - x^{2008}\sec^2(x)}{(\tan(x))^2}$
21.  $\frac{(-\cos(x))(2008x^{2007}) - x^{2008}\sin(x)}{(-\cos(x))^2}$
22.  $\frac{\tan(x)(-\sin(x)) - \cos(x)\sec^2(x)}{(\tan(x))^2}$
23.  $\frac{\cos(x)\sec^2(x) - \tan(x)(-\sin(x))}{(\cos(x))^2}$
24.  $\frac{\sin(x)\left(\frac{1}{5\sqrt[5]{x^4}}\right) - \sqrt[5]{x}\cos(x)}{(\sin(x))^2}$
25.  $\frac{\sec(x)(-\cos(x)) - (-\sin(x))\sec(x)\tan(x)}{(\sec(x))^2}$
26.  $\frac{\csc(x)\sec^2(x) - \tan(x)(-\csc(x)\cot(x))}{(\csc(x))^2}$
27.  $\frac{(-11x^2+5x+2)\sin(x) - (-\cos(x))(-22x+5)}{(-11x^2+5x+2)^2}$
28.  $\frac{\sin(x)(17x^{16}) - x^{17}\cos(x)}{(\sin(x))^2}$
29.  $\frac{\csc(x)e^x - e^x(-\csc(x)\cot(x))}{(\csc(x))^2}$
30.  $\frac{e^x(-\sin(x)) - \cos(x)e^x}{(e^x)^2}$
31.  $\frac{(2x^{11})\left(\frac{1}{14\sqrt[14]{x^{13}}}\right) - \sqrt[14]{x}(22x^{10})}{(2x^{11})^2}$
32.  $\frac{\cos(x)\left(\frac{1}{3\sqrt[3]{x^2}}\right) - \sqrt[3]{x}(-\sin(x))}{(\cos(x))^2}$
33.  $\frac{\csc(x)\left(\frac{1}{5\sqrt[5]{x^4}}\right) - \sqrt[5]{x}(-\csc(x)\cot(x))}{(\csc(x))^2}$
34.  $\frac{\cos(x)(-\cos(x)) - (-\sin(x))(-\sin(x))}{(\cos(x))^2}$
35.  $\frac{\sec(x)(100x^{99}) - x^{100}\sec(x)\tan(x)}{(\sec(x))^2}$
36.  $\frac{(-\cos(x))(17x^{16}) - x^{17}\sin(x)}{(-\cos(x))^2}$
37.  $\frac{\cot(x)\left(\frac{1}{2\sqrt{x}}\right) - \sqrt{x}(-\csc^2(x))}{(\cot(x))^2}$
38.  $\frac{e^x(17x^{16}) - x^{17}e^x}{(e^x)^2}$
39.  $\frac{\cos(x)\left(\frac{1}{2\sqrt{x}}\right) - \sqrt{x}(-\sin(x))}{(\cos(x))^2}$

$$40. \frac{(2x^{11}) \sec^2(x) - \tan(x)(22x^{10})}{(2x^{11})^2}$$

$$41. \frac{\cot(x) \left( \frac{1}{3\sqrt[3]{x^2}} \right) - \sqrt[3]{x}(-\csc^2(x))}{(\cot(x))^2}$$

$$42. \frac{(10x^3 + 5) \left( \frac{1}{3\sqrt[3]{x^2}} \right) - \sqrt[3]{x}(30x^2)}{(10x^3 + 5)^2}$$

$$43. \frac{(-\cos(x)) \sec^2(x) - \tan(x) \sin(x)}{(-\cos(x))^2}$$

$$44. \frac{e^x(-\csc^2(x)) - \cot(x)e^x}{(e^x)^2}$$

$$45. \frac{\sec(x)(-\csc^2(x)) - \cot(x)\sec(x)\tan(x)}{(\sec(x))^2}$$

$$46. \frac{\sec(x) \left( \frac{1}{2\sqrt{x}} \right) - \sqrt{x}\sec(x)\tan(x)}{(\sec(x))^2}$$

$$47. \frac{(2x^{11}) \cos(x) - \sin(x)(22x^{10})}{(2x^{11})^2}$$

$$48. \frac{\sin(x)(100x^{99}) - x^{100}\cos(x)}{(\sin(x))^2}$$

$$49. \frac{\sin(x)(-\sin(x)) - \cos(x)\cos(x)}{(\sin(x))^2}$$

$$50. \frac{\tan(x)e^x - e^x \sec^2(x)}{(\tan(x))^2}$$

$$51. \frac{(10x^3 + 5) \left( \frac{1}{14\sqrt[14]{x^{13}}} \right) - \sqrt[14]{x}(30x^2)}{(10x^3 + 5)^2}$$

$$52. \frac{\tan(x) \left( \frac{1}{2\sqrt{x}} \right) - \sqrt{x}\sec^2(x)}{(\tan(x))^2}$$

$$53. \frac{\cos(x) \left( \frac{1}{14\sqrt[14]{x^{13}}} \right) - \sqrt[14]{x}(-\sin(x))}{(\cos(x))^2}$$

$$54. \frac{e^x \cos(x) - \sin(x)e^x}{(e^x)^2}$$

$$55. \frac{(-11x^2 + 5x + 2) \sec^2(x) - \tan(x)(-22x + 5)}{(-11x^2 + 5x + 2)^2}$$

$$56. \frac{(-11x^2 + 5x + 2) \left( \frac{1}{2\sqrt{x}} \right) - \sqrt{x}(-22x + 5)}{(-11x^2 + 5x + 2)^2}$$

$$57. \frac{\sin(x) \left( \frac{1}{3\sqrt[3]{x^2}} \right) - \sqrt[3]{x}\cos(x)}{(\sin(x))^2}$$

$$58. \frac{\cot(x) \left( \frac{1}{14\sqrt[14]{x^{13}}} \right) - \sqrt[14]{x}(-\csc^2(x))}{(\cot(x))^2}$$

$$59. \frac{\csc(x) \left( \frac{1}{3\sqrt[3]{x^2}} \right) - \sqrt[3]{x}(-\csc(x)\cot(x))}{(\csc(x))^2}$$

$$60. \frac{(-11x^2 + 5x + 2)(-\cos(x)) - (-\sin(x))(-22x + 5)}{(-11x^2 + 5x + 2)^2}$$