

	Function	Basic Derivative Rules
1	$f(x) = ax^n$	$f'(x) =$
2	$f(x) = \sqrt{x}$	$f'(x) =$
3	$f(x) = \sqrt[3]{x}$	$f'(x) =$
4	$f(x) = \frac{1}{x}$	$f'(x) =$
5	$f(x) = \frac{1}{x^n}, n \neq 1$	$f'(x) =$
6	$F(x) = f(x) \cdot g(x)$	$F'(x) =$
7	$F(x) = \frac{f(x)}{g(x)}$	$F'(x) =$
8	$f(x) = e^x$	$f'(x) =$
9	$m(x) = 5^x$	$f'(x) =$
10	$F(x) = f(g(x))$	$F'(x) =$
11	$F(x) = f(g(h(x)))$	$F'(x) =$
12	$F(x) = f(g(h(j(x))))$	$F'(x) =$
13	$f(x) = \sin(x)$	$f'(x) =$
14	$f(x) = \cos(x)$	$f'(x) =$
15	$f(x) = \tan(x)$	$f'(x) =$
16	$f(x) = \sec(x)$	$f'(x) =$
17	$f(x) = \cot(x)$	$f'(x) =$
18	$f(x) = \csc(x)$	$f'(x) =$
19	$f(x) = \ln(x)$	$f'(x) =$
20	$f(x) = \arcsin(x)$	$f'(x) =$
21	$f(x) = \arctan(x)$	$f'(x) =$

ANSWERS	Function	Basic Derivative Rules
1	$f(x) = ax^n$	$f'(x) = anx^{n-1}$
2	$f(x) = \sqrt{x}$	$f'(x) = (1/2)x^{-1/2} = \frac{-1}{2\sqrt{x}}$
3	$f(x) = \sqrt[3]{x}$	$f'(x) = (1/3)x^{-2/3} = \frac{1}{3x^{2/3}}$
4	$f(x) = \frac{1}{x}$	$f'(x) = -1x^{-2} = \frac{-1}{x^2}$
5	$f(x) = \frac{1}{x^n}, n \neq 1$	$f'(x) = -nx^{-n-1} = \frac{-n}{x^{n+1}}$
6	$F(x) = f(x) \cdot g(x)$	$F'(x) = f'(x) \cdot g(x) + f(x) \cdot g'(x)$
7	$F(x) = \frac{f(x)}{g(x)}$	$F'(x) = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{[g(x)]^2}$
8	$f(x) = e^x$	$f'(x) = e^x$
9	$m(x) = b^x$	$f'(x) = \ln(b) \cdot b^x$
10	$F(x) = f(g(x))$	$F'(x) = f'(g(x)) \cdot g'(x)$
11	$F(x) = f(g(h(x)))$	$F'(x) = f'(g(h(x))) \cdot g'(h(x)) \cdot h'(x)$
12	$F(x) = f(g(h(j(x))))$	$F'(x) = f'(g(h(j(x)))) \cdot g'(h(j(x))) \cdot h'(j(x)) \cdot j'(x)$
13	$f(x) = \sin(x)$	$f'(x) = \cos(x)$
14	$f(x) = \cos(x)$	$f'(x) = -\sin(x)$
15	$f(x) = \tan(x)$	$f'(x) = \sec^2(x)$
16	$f(x) = \sec(x)$	$f'(x) = \sec(x) \tan(x)$
17	$f(x) = \cot(x)$	$f'(x) = -\csc^2(x)$
18	$f(x) = \csc(x)$	$f'(x) = -\csc(x) \cot(x)$
19	$f(x) = \ln(x)$	$f'(x) = \frac{1}{x}$
20	$f(x) = \arcsin(x)$	$f'(x) = \frac{1}{\sqrt{1-x^2}}$
21	$f(x) = \arctan(x)$	$f'(x) = \frac{1}{1+x^2}$