$$\left[\sin(3x)\right]' = \cos(3x)\cdot 3$$

$$\left[\left(3x^2+5x+1\right)^{10}\right]' = 10\left(3x^2+5x+1\right)^9\cdot(6x+5)$$

$$\neq 10\left(3x^2+5x+1\right)^9\cdot 6x+5$$

$$\left[\csc^3\left(\tan(x)\right)\right]' = \left[\left(\csc\left(\tan(x)\right)\right)^3\right]'$$

$$= 3\left(\csc\left(\tan(x)\right)\right)^2\cdot\left(-\csc\left(\tan(x)\right)\cot\left(\tan(x)\right)\right)\cdot\sec^2(x)$$

$$\left[e^{x^2+1}\right]' = e^{x^2+1}\cdot(2x+0)$$

$$\left[\cot\left((2x+3)^2\right)\right]' = -\csc^2\left((2x+3)^2\right)\cdot 2(2x+3)^1\cdot 2$$

$$\left[e^{\sin(x)}+\ln\left(\frac{1}{x^2+1}\right)\right]' = \left[e^{\sin(x)}+\ln\left(\left(x^2+1\right)^{-1}\right)\right]'$$

$$= e^{\sin(x)}\cdot\cos(x)+\frac{1}{\left(x^2+1\right)^{-1}}\cdot\left[-1\left(x^2+1\right)^{-2}\cdot 2x\right]$$

$$\left[e^{\sin(x)}+\ln\left(\frac{1}{x^2+1}\right)\right]' = \left[e^{\sin(x)}\cdot\cos(x)+\frac{1}{\left(\frac{1}{x^2+1}\right)}\cdot\frac{0\cdot\left(x^2+1\right)-1\cdot(2x)}{\left(x^2+1\right)^2}\right]$$

$$\left[e^{\sin(x)}+\ln\left(\frac{1}{x^2+1}\right)\right]' = \left[e^{\sin(x)}+\ln(1)-\ln\left(x^2+1\right)\right]'$$

$$= e^{\sin(x)}\cdot\cos(x)+0-\frac{1}{x^2+1}\cdot 2x$$

$$\left[5^{\tan(2x)} - \log_{10}\left(\left(x^2+5x\right)^8\right)\right]' =$$

$$\ln(5)\cdot 5^{\tan(2x)}\cdot \sec^2(2x)\cdot 2 - \frac{1}{\ln(10)}\cdot\frac{1}{\left(x^2+5x\right)^8}\cdot 8\left(x^2+5x\right)^7\cdot(2x+5)$$

$$\left[5^{\tan(2x)} - \log_{10}\left(\left(x^2+5x\right)^8\right)\right]' = \left[5^{\tan(2x)} - 8\cdot\log_{10}\left(x^2+5x\right)\right]'$$

$$\ln(5)\cdot 5^{\tan(2x)}\cdot \sec^2(2x)\cdot 2 - 8\cdot\frac{1}{\ln(10)}\cdot\frac{1}{x^2+5x}\cdot(2x+5)$$

$$\left[\sin\left(x^2\right)\right]' = \cos\left(x^2\right)\cdot 2x$$

$$\left[e^{\cos\left(x^2\right)}\right]' = e^{\cos\left(x^2\right)}\cdot\left[-\sin\left(x^2\right)\right]\cdot 2x$$

$$\left[\sec\left(3^x\right)\right]' = \sec\left(3^x\right)\tan\left(3^x\right)\cdot\ln(3)\cdot 3^x$$

$$\frac{d}{dx}\left[\ln(\cot(x))\right] = \frac{1}{\cot(x)}\cdot\left[-\csc^2(x)\right]$$

$$\frac{d}{dx}\left[\csc\left(\left[\ln(x)\right]^2\right)\right] = -\csc\left(\left[\ln(x)\right]^2\right)\cot\left(\left[\ln(x)\right]^2\right)\cdot 2(\ln(x))\cdot\frac{1}{x}$$

$$\frac{d}{dx}\left[x^2\right] = 2x$$

$$\frac{d}{dx}\left[\left(\boxed{\text{something}}\right)^2\right] = 2\cdot(\text{something})\cdot(\text{something})'$$

$$\frac{d}{dx}\left[\left(\boxed{\ln(x)}\right)^2\right] = 2\ln(x)\cdot\frac{1}{x}$$

$$\frac{d}{dx}\left[\operatorname{arccot}\left(3^{\cos(x)}\right)\right] = -\frac{1}{1+\left(3^{\cos(x)}\right)^2}\cdot\ln(3)\cdot 3^{\cos(x)}\cdot\left[-\sin(x)\right]$$

$f(x)$ is continuous at $x=3 \rightarrow \lim\limits_{x\to 3^+} f(x) = \lim\limits_{x\to 3^-} f(x) = f(3)$