

Derivative List

1. $\frac{d}{dx} c = 0$, c is a constant

2. $\frac{d}{dx} (f(x))^n = (n)(f'(x))(f(x))^{n-1}$, n is an integer

3. $\frac{d}{dx} e^{f(x)} = (f'(x))(e^{f(x)})$

4. $\frac{d}{dx} a^{f(x)} = (\ln a)(f'(x))(a^{f(x)})$, $a \in \mathbb{R}$

5. $\frac{d}{dx} \log_a f(x) = \frac{f'(x)}{(\ln a)(f(x))}$

6. $\frac{d}{dx} \sin(f(x)) = f'(x) \cdot \cos(f(x))$

7. $\frac{d}{dx} \cos(f(x)) = f'(x)(-\sin(f(x)))$

E.g. $\frac{d}{dx} (3x+1)^2$
 $= (2)(3x+1)(3x+1)'$
 $= 6(3x+1)$

E.g. $\frac{d}{dx} 3^{(2x)}$
 $= (2x)'(\ln 3)(3^{2x})$
 $= (2)(\ln 3)(3^{2x})$

E.g. $\frac{d}{dx} e^{(3x)}$
 $= (3x)'(e^{3x})$
 $= 3e^{3x}$

E.g. $\frac{d}{dx} \sin(4x+2)$
 $= (4x+2)'(\cos(4x+2))$
 $= 4(\cos(4x+2))$