Derivatives to Know

$$\frac{d}{dx}(x^n) = nx^{n-1}$$
$$\frac{d}{dx}\sin(x) = \cos(x)$$
$$\frac{d}{dx}\cos(x) = -\sin(x)$$
$$\frac{d}{dx}\tan(x) = \sec^2(x)$$
$$\frac{d}{dx}\cot(x) = -\csc^2(x)$$
$$\frac{d}{dx}\sec(x) = \sec(x)\tan(x)$$
$$\frac{d}{dx}\csc(x) = -\csc(x)\cot(x)$$
$$\frac{d}{dx}\sin^{-1}(x) = \frac{1}{\sqrt{1-x^2}}$$
$$\frac{d}{dx}\cos^{-1}(x) = -\frac{1}{\sqrt{1-x^2}}$$
$$\frac{d}{dx}\tan^{-1}(x) = \frac{1}{1+x^2}$$
$$\frac{d}{dx}\cot^{-1}(x) = -\frac{1}{1+x^2}$$
$$\frac{d}{dx}\sec^{-1}(x) = \frac{1}{|x|\sqrt{x^2-1}}$$
$$\frac{d}{dx}\csc^{-1}(x) = -\frac{1}{|x|\sqrt{x^2-1}}$$
$$\frac{d}{dx}\ln(x) = \frac{1}{x}$$
$$\frac{d}{dx}\log_a(x) = \frac{1}{x\ln(a)}$$
$$\frac{d}{dx}e^x = e^x$$
$$\frac{d}{dx}a^x = a^x\ln(a)$$
$$\frac{d}{dx}\sinh(x) = \cosh(x)$$
$$\frac{d}{dx}\cosh(x) = \sinh(x)$$
$$\frac{d}{dx}\tanh(x) = \operatorname{sech}^2(x)$$
$$\frac{d}{dx}\coth(x) = -\operatorname{csch}^2(x)$$
$$\frac{d}{dx}\operatorname{sech}(x) = -\operatorname{sech}(x)\tanh(x)$$

$$\frac{d}{dx}\operatorname{csch}(x) = -\operatorname{csch}(x)\coth(x)$$
$$\frac{d}{dx}\sinh^{-1}(x) = \frac{1}{\sqrt{1+x^2}}$$
$$\frac{d}{dx}\cosh^{-1}(x) = \frac{1}{\sqrt{x^2-1}} \text{ for } x > 1$$
$$\frac{d}{dx}\tanh^{-1}(x) = \frac{1}{1-x^2} \text{ for } |x| < 1$$
$$\frac{d}{dx}\coth^{-1}(x) = \frac{1}{1-x^2} \text{ for } |x| > 1$$
$$\frac{d}{dx}\operatorname{sech}^{-1}(x) = -\frac{1}{x\sqrt{1-x^2}} \text{ for } 0 < x < 1$$
$$\frac{d}{dx}\operatorname{csch}^{-1}(x) = -\frac{1}{|x|\sqrt{1+x^2}} \text{ for } x \neq 0$$