

$$1) \frac{d}{dx}c=0$$

$$2) \frac{d}{dx}(f(x) \pm g(x)) = \frac{d}{dx}f(x) \pm \frac{d}{dx}g(x)$$

$$3) \frac{d}{dx}(af(x) \pm bg(x)) = a \frac{d}{dx}f(x) \pm b \frac{d}{dx}g(x)$$

$$4) \frac{d}{dx}f(x)g(x) = f(x)g'(x) + g(x)f'(x)$$

$$5) \frac{d}{dx}f(g(x)) = f'(g(x))g'(x)$$

$$6) \frac{d}{dx} \frac{f(x)}{g(x)} = \frac{g(x)f'(x) - f(x)g'(x)}{g(x)^2}$$

$$7) \frac{d}{dx}x^n = nx^{n-1}$$

$$8) \frac{d}{dx}e^x = e^x$$

$$9) \frac{d}{dx}e^{f(x)} = e^{f(x)} \frac{d}{dx}f(x)$$

$$10) \frac{d}{dx}a^x = \ln(a)a^x$$

$$11) \frac{d}{dx}\ln|x| = \frac{1}{x}$$

$$12) \frac{d}{dx}\log_a(x) = \frac{1}{x \ln(a)}$$

$$13) \frac{d}{dx}\sin(x) = \cos(x)$$

$$14) \frac{d}{dx}\cos(x) = -\sin(x)$$

$$15) \frac{d}{dx}\csc(x) = -\csc(x)\cot(x)$$

$$16) \frac{d}{dx}\sec(x) = \sec(x)\tan(x)$$

$$17) \frac{d}{dx}\cot(x) = -\csc^2(x)$$

$$18) \frac{d}{dx}\sin^{-1}(x) = \frac{1}{\sqrt{1-x^2}}$$

$$19) \frac{d}{dx}\cos^{-1}(x) = \frac{-1}{\sqrt{1-x^2}}$$

$$20) \frac{d}{dx}\tan^{-1}(x) = \frac{1}{1+x^2}$$

$$21) \frac{d}{dx}\tan(x) = \sec^2(x)$$

$$22) \frac{d}{dx}\tan^{-1}(f(x)) = \frac{1}{1+f(x)^2} \frac{d}{dx}f(x)$$

$$23) \frac{d}{dx}f(x)^n = nf(x)^{n-1} \frac{d}{dx}f(x)$$

$$24) \frac{d}{dx}a^{f(x)} = \ln(a)a^{f(x)} \frac{d}{dx}f(x)$$