

$$\frac{d}{dx}[cu] = cu'$$

$$\frac{d}{dx}[uv] = uv' + vu'$$

$$\frac{d}{dx}[c] = 0$$

$$\frac{d}{dx}[x] = 1$$

$$\frac{d}{dx}[\ln u] = \frac{u'}{u}$$

$$\frac{d}{dx}[\sin u] = (\cos u) u'$$

$$\frac{d}{dx}[\tan u] = (\sec^2 u) u'$$

$$\frac{d}{dx}[\sec u] = (\sec u \tan u) u'$$

$$\frac{d}{dx}[c^u] = c^u (\ln c) u'$$

$$\frac{d}{dx}[u \pm v] = u' \pm v'$$

$$\frac{d}{dx}\left[\frac{u}{v}\right] = \frac{vu' - uv'}{v^2}$$

$$\frac{d}{dx}[u^n] = nu^{n-1} u'$$

$$\frac{d}{dx}[|u|] = \frac{u}{|u|} (u'), \quad u \neq 0$$

$$\frac{d}{dx}[e^u] = e^u u'$$

$$\frac{d}{dx}[\cos u] = -(\sin u) u'$$

$$\frac{d}{dx}[\cot u] = -(\csc^2 u) u'$$

$$\frac{d}{dx}[\csc u] = -(\csc u \cot u) u'$$

$$\int u^n du = \frac{1}{n+1} u^{n+1} + C, \quad n \neq -1$$

$$\int \frac{1}{u} du = \ln|u| + C$$

$$\int e^u du = e^u + C$$

$$\int a^u du = \frac{1}{\ln a} a^u + C$$

$$\int \ln u du = u \ln u - u + C$$

$$\int \sin u du = -\cos u + C$$

$$\int \cos u du = \sin u + C$$

$$\int a u du = a \int u du$$

$$\int (f(x) + g(x)) dx = \int f(x) dx + \int g(x) dx$$

$$\int_a^b f(x) dx = F(b) - F(a)$$

$$\int du = u + C$$

$$\int \tan u du = -\ln|\cos x| + C$$