$$\boxed{\int_a^b \underbrace{f(x)}_{u}\,\underbrace{g'(x)\,dx}_{dv} = \underbrace{f(x)}_{u}\,\underbrace{g(x)}_{v}\Big]_a^b - \int_a^b \underbrace{g(x)}_{v}\,\underbrace{f'(x)\,dx}_{du}}$$

Example:-

$$\int_0^1 \arctan x \, dx = \left|\begin{array}{ll} u = \arctan x & dv = dx \\ du = \dfrac{1}{1+x^2}\,dx & v = x \end{array}\right.$$

$$= x \arctan x \Big]_0^1 - \int_0^1 \frac{x}{1+x^2}\,dx$$

$$= \left(1\cdot \arctan 1 - 0\cdot \arctan 0\right) - \int_0^1 \frac{x}{1+x^2}\,dx$$

$$= \frac{\pi}{4} - \int_0^1 \frac{x}{1+x^2}\,dx \qquad \left|\begin{array}{ll} u = 1+x^2 & x=0 \Rightarrow u=1 \\ du = 2x\,dx & x=1 \Rightarrow u=2 \end{array}\right.$$

$$= \frac{\pi}{4} - \frac{1}{2}\int_1^2 \frac{1}{u}\,du = \frac{\pi}{4} - \frac{1}{2}\ln|u|\Big]_1^2$$

$$= \frac{\pi}{4} - \frac{1}{2}\Big(\ln 2 - \underbrace{\ln 1}_{=0}\Big) = \frac{\pi}{4} - \frac{\ln 2}{2}$$