

Important extension formulae of standard Integral forms

$$(i) \quad \int x^n \cdot dx = \frac{x^{n+1}}{n+1} + c; \quad (n \neq -1)$$

$$\Rightarrow \int (ax+b)^n \cdot dx = \frac{(ax+b)^{n+1}}{(n+1) \cdot a} + c; \quad (n \neq -1)$$

$$(ii) \quad \int \frac{1}{x} \cdot dx = \log |x| + c \Rightarrow \int \frac{1}{(ax+b)} \cdot dx = \frac{\log |ax+b|}{a} + c$$

$$(iii) \quad \int a^x \cdot dx = \frac{a^x}{\log a} + c; \quad (a > 0, a \neq 1)$$

$$\Rightarrow \int a^{mx+b} \cdot dx = \frac{a^{mx+b}}{m \cdot \log a} + c; \quad (a > 0; a \neq 1)$$

$$(iv) \quad \int e^x \cdot dx = e^x + c \Rightarrow \int e^{mx+b} \cdot dx = \frac{e^{mx+b}}{m} + c$$

$$(v) \quad \int \cos x \cdot dx = \sin x + c \Rightarrow \int \cos(ax+b) dx = \frac{\sin(ax+b)}{a} + c$$

$$(vi) \quad \int \sin x dx = -\cos x + c \Rightarrow \int \sin(ax+b) dx = -\frac{\cos(ax+b)}{a} + c$$

$$(vii) \quad \int \sec^2 x dx = \tan x + c \Rightarrow \int \sec^2(ax+b) dx = \frac{\tan(ax+b)}{a} + c$$

$$(viii) \quad \int \operatorname{cosec}^2 x dx = -\cot x + c \Rightarrow \int \operatorname{cosec}^2(ax+b) dx = \frac{-\cot(ax+b)}{a} + c$$

$$(ix) \quad \int \sec x \tan x dx = \sec x + c$$

$$\Rightarrow \int \sec(ax+b) \tan(ax+b) dx = \frac{\sec(ax+b)}{a} + c$$

$$(x) \quad \int \operatorname{cosec} x \cot x dx = -\operatorname{cosec} x + c$$

$$\Rightarrow \int \operatorname{cosec}(ax+b) \cot(ax+b) dx = -\frac{\operatorname{cosec}(ax+b)}{a} + c.$$