常见凑微分类型

$$1.\int f(ax+b)\mathrm{d}x=\frac{1}{a}\int f(ax+b)\mathrm{d}(ax+b)\ (a\neq 0)$$

$$2.\int f(ax^{m+1}+b)x^{m}\mathrm{d}x$$

$$=\frac{1}{a(m+1)}\int f(ax^{m+1}+b)\mathrm{d}(ax^{m+1}+b)$$

$$3.\int \frac{f\left(\frac{1}{x}\right)}{x^{2}}\mathrm{d}x=-\int f\left(\frac{1}{x}\right)\mathrm{d}\left(\frac{1}{x}\right)$$

$$4.\int \frac{f(\ln x)}{x}\mathrm{d}x = \int f(\ln x)\mathrm{d}(\ln x)$$

$$5.\int f(a^x)a^x\mathrm{d}x = \frac{1}{\ln a}\int f(a^x)\mathrm{d}(a^x)$$

$$6.\int f(\mathrm{e}^x)\mathrm{e}^x\mathrm{d}x = \int f(\mathrm{e}^x)\mathrm{d}(\mathrm{e}^x)$$

$$7.\int \frac{f(\sqrt{x})}{\sqrt{x}}\mathrm{d}x = 2\int f(\sqrt{x})\mathrm{d}(\sqrt{x})$$

$$8.\int f(\sin x)\cos x\mathrm{d}x = \int f(\sin x)\mathrm{d}\sin x$$

$$9.\int f(\cos x)\sin x\mathrm{d}x = -\int f(\cos x)\mathrm{d}\cos x$$

$$10.\int \frac{f(\tan x)}{\cos^2 x}\,\mathrm{d}x = \int f(\tan x)\mathrm{d}\tan x$$

$$11.\int \frac{f(\cot x)}{\sin^2 x}\,\mathrm{d}x = -\int f(\cot x)\mathrm{d}\cot x$$

$$12.\int \frac{f(\arcsin x)}{\sqrt{1-x^2}}\mathrm{d}x = \int f(\arcsin x)\mathrm{d}\arcsin x$$

$$13.\int \frac{f(\arctan x)}{1+x^2}\mathrm{d}x = \int f(\arctan x)\mathrm{d}\arctan x$$

$$14.\int \frac{f'(x)}{f(x)}\mathrm{d}x = \int \frac{\mathrm{d}f(x)}{f(x)} = \ln\left|f(x)\right| + C$$