

$$F'(x) = \lim_{h \rightarrow 0, h \neq 0} \frac{F(x+h) - F(x)}{h}, \quad \int_a^b F'(x) dx =$$

$$F(b) - F(a), \quad \int_a^b f(x) dx = \int_a^b f(g(u))g'(u) du$$

$$\lim_{n \rightarrow \infty} \frac{n!}{\sqrt{n}} \left(\frac{x}{e}\right)^n = \sqrt{2\pi}, \quad \int_0^\infty \frac{dx}{e^x - 1} = \frac{\pi^2}{6}$$

$$\int_0^\infty e^{-y^2/2} dy$$

$$\sin\left(\frac{\pi x}{2}\right) = \frac{\pi x}{2} \prod_{n=0}^{\infty} \left(1 - \frac{x^2}{(2n+1)^2}\right) \sum_{n=0}^{\infty} \frac{(-1)^{n+1}}{(2n+1)^2} = \frac{\pi}{2} \prod_{n=0}^{\infty} \left(1 - \frac{x^2}{(2n+1)^2}\right) \sum_{n=0}^{\infty} \frac{(-1)^{n+1}}{(2n+1)^2}$$

$$x^2 J_v''(x) + x J_v'(x) + (x^2 - v^2) J_v(x) = 0,$$

$$\Gamma(y) = \int_0^\infty e^{-x} x^{y-1} dx, \quad \Gamma(x) \Gamma(1-x) = \frac{\pi}{\sin(\pi x)}$$

$$\Gamma(x) = \lim_{n \rightarrow \infty} \frac{x^n}{n!} (x+1)(x+2)\dots(x+n), \quad \Gamma(2x) = \frac{\pi}{\sqrt{\pi}} \prod_{k=1}^{\infty} \left(h + \frac{x}{k}\right) e^{-x/k}.$$

$$\zeta(s) = \frac{1}{\Gamma(s)} \int_0^\infty e^{-xt} t^{s-1} dt, \quad \int_0^\infty x^{s-1} e^{-x/k} dx = \frac{\pi}{2} \operatorname{sgn}(k)$$

$$f'(x) = \begin{pmatrix} \frac{\partial f_1}{\partial x_1}(x) & \cdots & \frac{\partial f_m}{\partial x_1}(x) \\ \vdots & \ddots & \vdots \\ \frac{\partial f_m}{\partial x_n}(x) & \cdots & \frac{\partial f_m}{\partial x_n}(x) \end{pmatrix}$$

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$$\int_I (f \circ g) |\det g'| dv^n, \quad \int_S \operatorname{curl} F \cdot dS = \int_Y F \cdot d\gamma.$$

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