Formelsammlung Mathematik

$$x_{1,2} = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

$$x_{1,2} = -\frac{p}{2} \pm \sqrt{\left(\frac{p}{2}\right)^2 - q}$$

$$(x^\alpha)' = \alpha x^{\alpha-1}$$

$$\left(e^x\right)' = e^x$$

$$(\ln x)' = \frac{1}{x}$$

$$(f+g)' = f' + g'$$

$$(f \cdot g)' = f'g + fg'$$

$$f(g(x))' = f'(g(x)) \cdot g'(x)$$

$$\left(\frac{f}{g}\right)' = \frac{f'g - fg'}{g^2}$$

$$\varepsilon(x) = \frac{f'(x)}{f(x)}x$$

$$p_{\min} = \overline{V}(x_{\min})$$

$$R(p) = pD(p)$$

$$\pi(p) = R(p) - C(D(p))$$

$$L(x_1, x_2, \lambda) = C(x_1, x_2) - \lambda(F(x_1, x_2) - q)$$

$$Aa^x = A(1+r)^x$$

$$Aa^x = Ae^{cx}, c = \ln a$$

$$\int x^\alpha \,\mathrm{d}x = \frac{x^{\alpha+1}}{\alpha+1} + C, \alpha \neq -1$$

$$\int e^x \,\mathrm{d}x = e^x + C$$

$$\int \frac{1}{x} \,\mathrm{d}x = \ln x + C$$

$$\int e^{ax+b} \,\mathrm{d}x = \frac{1}{a}e^{ax+b} + C$$

$$\int \frac{1}{ax+b} \,\mathrm{d}x = \frac{1}{a}\ln(ax+b) + C$$

$$\overline{f} = \frac{1}{b-a}\int_a^b f(x) \,\mathrm{d}x$$

$$a_n = a_1 + (n-1)d$$

$$s_n = n \cdot \frac{a_1 + a_n}{2}$$

$$x_n = x_0 q^n$$

$$s_n = x_0 \cdot \frac{q^n - 1}{q-1}$$

$$K_t = K_0(1+r)^t$$

$$B_t = a \cdot \frac{1-d^t}{1-d}$$

$$B_t = a \cdot d \cdot \frac{1-d^t}{1-d}$$

$$E_t = a \cdot q \cdot \frac{q^t - 1}{q-1}$$

$$E_t = a \cdot \frac{q^t - 1}{q-1}$$

$$B_\infty = \frac{a}{1-d}$$

$$1 + r = \left(1 + \frac{c}{k}\right)^k$$

$$K_t = K_0\left(1 + \frac{c}{k}\right)^{tk}$$

$$K(t) = K(0)e^{ct}$$

$$K(T) = e^{cT}K(0) + \int_0^T e^{c(T-t)}a(t) \,\mathrm{d}t$$

$$B(T) = K(0) + \int_0^T e^{-ct}a(t) \,\mathrm{d}t$$

$$\det \mathbf{A} = a_{11}a_{22} - a_{12}a_{21}$$

$$\mathbf{A}^{-1} = \frac{1}{\det \mathbf{A}}\begin{pmatrix} a_{22} & -a_{12} \\ -a_{21} & a_{11} \end{pmatrix}$$

$$df(x_1, x_2) = f_1' dx_1 + f_2' dx_2$$

$$f'(x_1) = -\frac{F_1'(x_1, x_2)}{F_2'(x_1, x_2)}$$

$$\frac{\partial C^*}{\partial q} = \lambda^*$$

$$P(A) = \frac{|A|}{|\Omega|}$$

$$P(\overline{A}) = 1 - P(A)$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$P(B) = P(B|A) \cdot P(A) + P(B|\overline{A}) \cdot P(\overline{A})$$

$$P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B|A) \cdot P(A) + P(B|\overline{A}) \cdot P(\overline{A})}$$

$$E(X) = x_1 \cdot P(X = x_1) + \ldots + x_k \cdot P(X = x_k)$$

$$E(X) = \int_{-\infty}^{\infty} x\, f(x)\, dx$$

$$E(aX + b) = aE(X) + b$$

$$V(X) = E((X - \mu)^2) = E(X^2) - \mu^2$$

$$V(aX + b) = a^2 V(X)$$

$$\Phi(x) = P(Z \leq x)$$

$$Z = \frac{X - \mu}{\sigma}$$

$$\binom{n}{x} = \frac{n!}{(n-x)! \cdot x!}$$

$$f(x) = \binom{n}{x} \pi^x (1-\pi)^{n-x}$$

$$E(X) = n\pi$$

$$V(X) = n\pi(1-\pi)$$