

# Matematika G1 Segédlet

$$2 \sin^2(\alpha) = 1 - \cos(2\alpha)$$

$$\int \frac{f'(x)}{f(x)} dx = \ln(|f(x)|) + c \quad (f(x) \neq 0)$$

$$\sin(\alpha) = \frac{\tan(\alpha)}{\sqrt{1 + \tan^2(\alpha)}}$$

$$\int f'(g(x))g'(x)dx = f(g(x)) + c$$

$$\cos(\alpha + \beta) = \cos(\alpha) \cos(\beta) - \sin(\alpha) \sin(\beta)$$

$$T = \frac{1}{2} \int_{\alpha}^{\beta} r^2(\varphi) d\varphi$$

$$2 \cos(\alpha) \sin(\beta) = \sin(\alpha + \beta) - \sin(\alpha - \beta)$$

$$I = \int_{\alpha}^{\beta} \sqrt{1 + (f'(x))^2} dx$$

$f(x)$	$f'(x)$
$\arcsin(x)$	$\frac{1}{\sqrt{1-x^2}}$
$\arccos(x)$	$\frac{-1}{\sqrt{1-x^2}}$
$\arctan(x)$	$\frac{1}{x^2+1}$
$\text{arcctg}(x)$	$\frac{-1}{x^2+1}$
$\text{arsh}(x)$	$\frac{1}{\sqrt{x^2+1}}$
$\text{arch}(x)$	$\frac{1}{\sqrt{x^2-1}}$

$$I = \int_{\alpha}^{\beta} \sqrt{(x'(t))^2 + (y'(t))^2} dt$$

$$V = \pi \int_{\alpha}^{\beta} (f(x))^2 dx$$

$$V = \pi \int_{\alpha}^{\beta} (y(t))^2 x'(t) dt$$

$$A = 2\pi \int_{\alpha}^{\beta} f(x) \sqrt{1 + (f'(x))^2} dx$$

$$A = 2\pi \int_{\alpha}^{\beta} y(t) \sqrt{(x'(t))^2 + (y'(t))^2} dt$$

$$x_s = \frac{M_y}{m}, \quad y_s = \frac{M_x}{m}$$

$$T_n(x) = \sum_{k=0}^n \frac{f^{(k)}(x_0)}{k!} (x - x_0)^k$$

$$M_x = \frac{1}{2} \int_a^b (f(x))^2 dx = \frac{1}{2} \int_a^b (y(t))^2 x'(t) dt$$

$$\frac{d^2y(x)}{dx^2} = \frac{y''(t)x'(t) - y'(t)x''(t)}{(x'(t))^3}$$

$$M_y = \int_a^b x f(x) dx = \int_a^b x(t) y(t) x'(t) dt$$

$$\int (f(x))^n f'(x) dx = \frac{(f(x))^{n+1}}{n+1} + c \quad (n \neq -1)$$

$$m = \int_a^b f(x) dx = \int_a^b y(t) x'(t) dt$$