Kompleksni brojevi: $i^2 = -1, z = a + bi, \quad \bar{z} = a - bi, \quad |z| = \sqrt{a^2 + b^2}, a, b \in \mathbb{R}$

Potencije:

$a^n \cdot a^m = a^{n+m}$, $a^n : a^m = a^{n-m}$ $(a \neq 0)$, $a^{-m} = \frac{1}{a^m}$ $(a \neq 0)$ $\sqrt[m]{a^n} = a^{\frac{n}{m}}$

$(a \pm b)^2 = a^2 \pm 2ab + b^2$, $(a \pm b)^3 = a^3 \pm 3a^2b + 3ab^2 \pm b^3$

$a^2 - b^2 = (a - b)(a + b)$, $a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$

Kvadratna jednadžba: $ax^2 + bx + c = 0, a \neq 0 \Rightarrow x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$;

Vieteove formule: $x_1 + x_2 = -\frac{b}{c}$, $x_1 \cdot x_2 = \frac{c}{a}$

Tjeme: $T\left(-\frac{b}{2a}, \frac{4ac - b^2}{4a}\right)$

Logaritamska i eksponencijalna funkcija: $b^x = a \Leftrightarrow x = \log_b a$, $\log_b b^x = x = b^{\log_b x}$

$log_b(xy) = log_b x + log_b y$, $log_b \frac{x}{y} = log_b x - log_b y$, $log_b x^y = y log_b x$, $log_a x = \frac{\log_b x}{\log_b a}$

Geometrija:

Površina trokuta: $P = \frac{a \cdot v_a}{2}$, $P = \sqrt{s \cdot (s-a) \cdot (s-b) \cdot (s-c)}$, $s = \frac{a+b+c}{2}$ $P = \frac{ab \sin\gamma}{2}$ $P = \frac{abc}{4r_o}$ $P = r_u s$

Jednakostraničan trokut: $P = \frac{a^2\sqrt{3}}{4}$ $v = \frac{a\sqrt{3}}{2}$ $r_0 = \frac{2}{3}v$ $r_u = \frac{1}{3}v$

Površina paralelograma: $P = av$ *Površina trapeza:* $P = \frac{a+c}{2}v$

Površina kruga: $P = r^2\pi$ *Opseg kruga:* $O = 2r\pi$

Površina kružnog isječka: $P = \frac{r^2\pi\alpha}{360}$ *Duljina kružnog luka:* $l = \frac{r\pi\alpha}{180}$

Geometrija prostora:

B= površina osnovke (baze), P=površina pobočja, h=duljina visine r=polumjer osnovke stošca

Obujam (volumen) prizme i valjka: $V = Bh$ *Oplošje prizme i valjka:* $O = 2B + P$

Obujam (volumen) piramide i stošca: $V = \frac{1}{3}Bh$ *Oplošje piramide:* $O = B + P$

Oplošje stošca: $O = r^2\pi + r\pi s$,

Oplošje (volumen) kugle: $V = \frac{4}{3}r^3\pi$ *Oplošje kugle:* $O = 4r^2\pi$, *r=polumjer kugle*

U pravokutnom trokutu:

$\text{sinus}\, kuta = \frac{nasuprotna\ kateta}{hiipotenuza}$ $\text{kosinus}\, kuta = \frac{priležeća\ kateta}{hiipotenuza}$ $\text{tangens}\, kuta = \frac{nasuprotna\ kateta}{priležeća\ kateta}$

Trigonometrija:

Poučak o sinusima: $\frac{a}{\sin\alpha} = \frac{b}{\sin\beta} = \frac{c}{\sin\gamma}$ Poučak o kosinusima: $c^2 = a^2 + b^2 - 2ab\cos\gamma$

$\sin^2 x + \cos^2 x = 1$, $tgx = \frac{\sin x}{\cos x}$

$$\sin 2x = 2\sin x \cos x \qquad \cos 2x = \cos^2 x - \sin^2 x$$

$$\sin(x \pm y) = \sin x \cos y \pm \sin y \cos x \qquad \cos(x \pm y) = \cos x \cos y \mp \sin x \sin y$$

$$tg\,(x \pm y) = \frac{tgx \pm tgy}{1 \mp tgx \cdot tgy}$$

$$\sin x + \sin y = 2\sin\frac{x+y}{2}\cos\frac{x-y}{2} \qquad \sin x - \sin y = 2\cos\frac{x+y}{2}\sin\frac{x-y}{2}$$

$$\cos x + \cos y = 2\cos\frac{x+y}{2}\cos\frac{x-y}{2} \qquad \cos x - \cos y = -2\sin\frac{x+y}{2}\sin\frac{x-y}{2}$$

$$\sin x \sin y = \frac{1}{2}[\cos(x-y) - \cos(x+y)] \qquad \cos x \cos y = \frac{1}{2}[\cos(x-y) + \cos(x+y)]$$

$$\sin x \cos y = \frac{1}{2}[\sin(x-y) + \sin(x+y)]$$

$$\sin\frac{\pi}{6} = \frac{1}{2} \qquad \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2} \qquad \sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}$$

Analitička geometrija:

Udaljenost točaka T_1, T_2: $d(T_1, T_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Polovište dužine $\overline{T_1T_2}$: $P\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

Vektor: $\overrightarrow{T_1T_2} = \vec{a} = (x_2 - x_1)\vec{\imath} + (y_2 - y_1)\vec{\jmath} = a_1\vec{\imath} + a_2\vec{\jmath}$

Skalarni umnožak vektora: $\vec{a} \cdot \vec{b} = |\vec{a}||\vec{b}|\cos\alpha$, $\vec{a} \cdot \vec{b} = a_1b_1 + a_2b_2$

Jednadžba pravca: $y - y_1 = k(x - x_1)$, $k = \frac{y_2 - y_1}{x_2 - x_1}$

Kut α između dvaju pravaca: $tg\alpha = \left|\frac{k_2-k_1}{1+k_1k_2}\right|$

Udaljenost točke $T(x_1, y_1)$ i pravca $p \dots Ax + By + C = 0$: $d(T,p) = \frac{|Ax_1+By_1+C|}{\sqrt{A^2+B^2}}$

Krivulja drugog reda

	Jednadžba	Tangenta u točki krivulje (x_1, y_1)	Uvijet dodira krivulje s pravcem $y = kx + l$
Kružnica središte $S(p,q)$	$(x-p)^2 + (y-q)^2 = r^2$	$(x_1-p)(x-p) + (y_1-q)(y-q) = r^2$	$r^2(1+k^2) = (kp-q+l)^2$
Elipsa fokusi $F_{1,2}(\pm e, 0)$ $e^2 = a^2 - b^2$	$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	$\frac{xx_1}{a^2} + \frac{yy_1}{b^2} = 1$	
Hiperbola fokusi $F_{1,2}(\pm e, 0)$ $e^2 = a^2 + b^2$ asimptote $y = \pm\frac{b}{a}x$	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	$\frac{xx_1}{a^2} - \frac{yy_1}{b^2} = 1$	
Parabola fokus $F\left(\frac{p}{2}, 0\right)$	$y^2 = 2px$	$yy_1 = p(x + x_1)$	

	0°	30°	45°	60°	90°	120°	135°	150°	180°	210°	225°	240°	270°	300°	315°	330°	360°
	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	−1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	−1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
tg	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$\pm\infty$	$-\sqrt{3}$	−1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$\pm\infty$	$-\sqrt{3}$	−1	$-\frac{\sqrt{3}}{3}$	0
ctg	$\pm\infty$	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	$-\frac{\sqrt{3}}{3}$	−1	$-\sqrt{3}$	$\pm\infty$	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	$-\frac{\sqrt{3}}{3}$	−1	$-\sqrt{3}$	$\pm\infty$

FUNKCIJE POLOVIČNOG KUTA

$$\sin\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{2}}$$

$$\cos\frac{\alpha}{2} = \pm\sqrt{\frac{1+\cos\alpha}{2}}$$

$$\tan\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}} = \frac{1-\cos\alpha}{\sin\alpha} = \frac{\sin\alpha}{1+\cos\alpha}$$

$$\operatorname{ctg}\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}} = \frac{1+\cos\alpha}{\sin\alpha}\,\frac{\sin\alpha}{1-\cos\alpha}$$