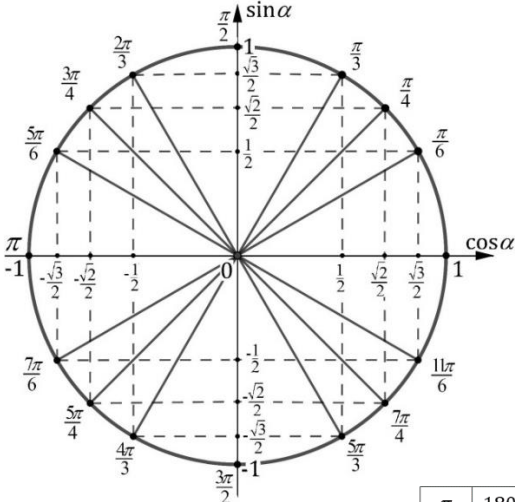
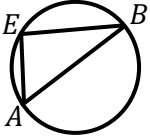
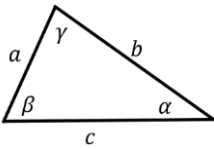
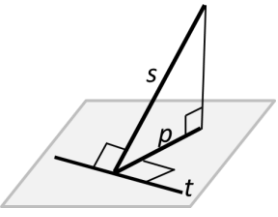


|                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-----------------|-----|-----------------|-----|-----------------|-----|-----------------|-----|
| <b>Saīsinātās reizināšanas formulas</b><br>$(a \pm b)^2 = a^2 \pm 2ab + b^2$ $a^2 - b^2 = (a - b)(a + b)$ $(a \pm b)^3 = a^3 \pm 3a^2b + 3ab^2 \pm b^3$ $a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$                                                                                   | <b>Aritmētiskā progresija</b><br>$a_n = a_1 + (n - 1)d$ $S_n = \frac{(a_1 + a_n) n}{2}$ $a_k = \frac{a_{k-1} + a_{k+1}}{2}$                                                                                                                                            | <b>Ģeometriskā progresija</b><br>$b_n = b_1 \cdot q^{n-1}$ $S_n = \frac{b_1(q^n - 1)}{q - 1}$ $b_k^2 = b_{k-1} \cdot b_{k+1}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Saliktie procenti</b><br>$A$ – uzkrātā vērtība,<br>$S$ – sākumkapitāls,<br>$r$ – procentu likme laika periodā (%),<br>$n$ – laika periodu skaits<br>$A = S \cdot \left(1 + \frac{r}{100}\right)^n$ |       |      |                 |     |                 |     |                 |     |                 |     |
| <b>Kvadrātvienādojums</b><br>$ax^2 + bx + c = 0$ $D = b^2 - 4ac \quad x_{1;2} = \frac{-b \pm \sqrt{D}}{2a}$ <b>Vjeta teorēma</b><br>$x^2 + px + q = 0$ $\begin{cases} x_1 + x_2 = -p \\ x_1 \cdot x_2 = q \end{cases}$ <b>Kvadrāttrinoms</b><br>$ax^2 + bx + c = a(x - x_1)(x - x_2)$ | <b>Sakņu īpašības</b><br>$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{a \cdot b}$ $\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$ $\sqrt[n]{a^k} = \sqrt[n]{a^k}$ $\sqrt[n]{a^m} = \sqrt[n]{a^m}$ $\sqrt{a^2} =  a $                                            | <b>Trigonometrija</b><br> <table data-bbox="1355 1028 1474 1263"><tr><td><math>\pi</math></td><td>180°</td></tr><tr><td><math>\frac{\pi}{2}</math></td><td>90°</td></tr><tr><td><math>\frac{\pi}{3}</math></td><td>60°</td></tr><tr><td><math>\frac{\pi}{4}</math></td><td>45°</td></tr><tr><td><math>\frac{\pi}{6}</math></td><td>30°</td></tr></table> $\sin^2 \alpha + \cos^2 \alpha = 1$ $\sin 2\alpha = 2 \sin \alpha \cos \alpha$ $\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha$ $\sin(\alpha \pm \beta) = \sin \alpha \cos \beta \pm \cos \alpha \sin \beta$ $\cos(\alpha \pm \beta) = \cos \alpha \cos \beta \mp \sin \alpha \sin \beta$ |                                                                                                                                                                                                       | $\pi$ | 180° | $\frac{\pi}{2}$ | 90° | $\frac{\pi}{3}$ | 60° | $\frac{\pi}{4}$ | 45° | $\frac{\pi}{6}$ | 30° |
| $\pi$                                                                                                                                                                                                                                                                                 | 180°                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| $\frac{\pi}{2}$                                                                                                                                                                                                                                                                       | 90°                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| $\frac{\pi}{3}$                                                                                                                                                                                                                                                                       | 60°                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| $\frac{\pi}{4}$                                                                                                                                                                                                                                                                       | 45°                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| $\frac{\pi}{6}$                                                                                                                                                                                                                                                                       | 30°                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| <b>Logaritmu īpašības</b><br>$a^{\log_a b} = b$ $\log_a(xy) = \log_a x + \log_a y$ $\log_a \frac{x}{y} = \log_a x - \log_a y$ $\log_a x^k = k \cdot \log_a x$ $\log_a b = \frac{\log_c b}{\log_c a}$                                                                                  | <b>Pakāpju īpašības</b><br>$a^0 = 1$ $a^{-n} = \frac{1}{a^n}$ $\frac{a^m}{a^n} = \sqrt[n]{a^m}$ $a^m \cdot a^n = a^{m+n}$ $\frac{a^m}{a^n} = a^{m-n}$ $(a^m)^n = a^{m \cdot n}$ $a^n \cdot b^n = (a \cdot b)^n$ $\frac{a^n}{b^n} = \left(\frac{a}{b}\right)^n$         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| <b>Skaitļa modulis</b><br>$ a  = \begin{cases} a, & \text{ja } a \geq 0 \\ -a, & \text{ja } a < 0 \end{cases}$                                                                                                                                                                        |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |
| <b>Kombinatorika</b><br>$P_n = n!$ $A_n^k = \frac{n!}{(n-k)!}$ $A_n^k = n(n-1)(n-2) \cdot \dots \cdot (n-k+1)$ $C_n^k = \frac{n!}{k!(n-k)!}$ $C_n^k = \frac{A_n^k}{k!}$ $C_n^k = C_n^{n-k}$                                                                                           | <b>Varbūtību teorija</b><br>Ja $A$ un $B$ – nesavienojami notikumi, tad<br>$P(A \cup B) = P(A) + P(B)$<br>Ja $A$ un $B$ – neatkarīgi notikumi, tad<br>$P(A \cap B) = P(A) \cdot P(B)$<br>Ja $A$ un $B$ – atkarīgi notikumi, tad<br>$P(B A) = \frac{P(A \cap B)}{P(A)}$ | <b>Statistika</b><br>$f_1, f_2, \dots, f_k$ – elementu $x_1, x_2, \dots, x_k$ parādīšanās biežums<br>$\bar{x}$ – svērtais aritmētiskais vidējais<br>$n$ – izlases apjoms<br>$\bar{x} = \frac{x_1 f_1 + x_2 f_2 + \dots + x_k f_k}{n}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                       |       |      |                 |     |                 |     |                 |     |                 |     |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Vektori plaknē</b><br>Ja $A(x_1; y_1)$ un $B(x_2; y_2)$ , tad<br>$\overrightarrow{AB} = (x_2 - x_1; y_2 - y_1)$<br>Ja $\vec{a} = (a_x; a_y)$ , $\vec{b} = (b_x; b_y)$ , tad<br>$\vec{a} \pm \vec{b} = (a_x \pm b_x; a_y \pm b_y)$<br>$k\vec{a} = (ka_x; ka_y)$ $ \vec{a}  = \sqrt{a_x^2 + a_y^2}$                                                                                                                                                                      |  | <b>Vektori telpā</b><br>Ja $A(x_1; y_1; z_1)$ un $B(x_2; y_2; z_2)$ , tad<br>$\overrightarrow{AB} = (x_2 - x_1; y_2 - y_1; z_2 - z_1)$<br>Ja $\vec{a} = (a_x; a_y; a_z)$ un $\vec{b} = (b_x; b_y; b_z)$ , tad<br>$\vec{a} \pm \vec{b} = (a_x \pm b_x; a_y \pm b_y; a_z \pm b_z)$<br>$k\vec{a} = (ka_x; ka_y; ka_z)$ $ \vec{a}  = \sqrt{a_x^2 + a_y^2 + a_z^2}$                                                                                                               |  |
| <b>Attālums starp punktiem, nogriežņa viduspunkts</b><br>Ja $A(x_1; y_1)$ un $B(x_2; y_2)$ , tad<br>$ AB  = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$<br>$[AB]$ viduspunkts ir $C\left(\frac{x_1+x_2}{2}; \frac{y_1+y_2}{2}\right)$                                                                                                                                                                                                                                           |  | <b>Taisnes vienādojums</b><br>$\frac{x - x_1}{x_2 - x_1} = \frac{y - y_1}{y_2 - y_1}$ $y - y_1 = k(x - x_1)$ $y = kx + b$<br>$P_1(x_1; y_1)$ un $P_2(x_2; y_2)$ – punkti, caur kuriem iet taisne.<br>Taisnes virziena koeficients $k = \frac{\Delta y}{\Delta x} = \operatorname{tg} \alpha$ .<br>Taisnes $y = k_1x + b_1$ un $y = k_2x + b_2$ ir:<br>paralēlas, ja $k_1 = k_2$<br>perpendikulāras, ja $k_1 \cdot k_2 = -1$                                                  |  |
| <b>Riņķa līnijas vienādojums</b><br>Ja centrs $O(x_0; y_0)$ un rādiuss $R$ , tad<br>$(x - x_0)^2 + (y - y_0)^2 = R^2$                                                                                                                                                                                                                                                                                                                                                     |  | <b>Paralelograms</b><br>$a, b$ – malas, $d_1, d_2$ – diagonāles,<br>$h_a$ – augstums pret malu $a$<br>$\alpha$ – leņķis starp malām<br>$2a^2 + 2b^2 = d_1^2 + d_2^2$<br>$S = ab \sin \alpha$ $S = a \cdot h_a$                                                                                                                                                                                                                                                               |  |
| <b>Riņķis un riņķa līnija</b><br>$R$ – rādiuss<br>$\alpha$ – centra leņķis<br>$C$ – riņķa līnijas garums<br>$l_\alpha$ – loka garums<br>$S_\alpha$ – sektora laukums<br>$C = 2\pi R$ $S = \pi R^2$<br>$l_\alpha = \frac{\pi R \alpha}{180^\circ}$ $S_\alpha = \frac{\pi R^2 \alpha}{360^\circ}$<br>$AB$ – diametrs, $E$ – punkts uz riņķa līnijas<br>$\sphericalangle AEB = 90^\circ$  |  | <b>Trijstūris</b><br>Sinusu teorēma<br>$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$<br>Kosinusa teorēma<br>$a^2 = b^2 + c^2 - 2bc \cos \alpha$<br>Trijstūrī ievilktais riņķa līnijas centrs ir trijstūra bisektrišu krustpunkts.<br>Trijstūrim apvilkta riņķa līnijas centrs ir malu vidusperpendikulu krustpunkts.<br>$S_\Delta = \frac{1}{2} ab \sin \gamma$  |  |
| <b>Regulārs trijstūris</b><br>$a$ – mala, $h$ – augstums, $r$ – ievilkta riņķa rādiuss, $R$ – apvilkta riņķa rādiuss<br>$h = \frac{a\sqrt{3}}{2}$ $r = \frac{1}{3}h$ $R = \frac{2}{3}h$ $S = \frac{a^2\sqrt{3}}{4}$                                                                                                                                                                                                                                                       |  | <b>Rombs</b><br>$d_1, d_2$ – diagonāles<br>$S = \frac{1}{2} d_1 \cdot d_2$                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| <b>Triju perpendikulu teorēma</b><br>Taisne ( $t$ ), kas atrodas plaknē, ir perpendikulāra slīpnei ( $s$ ), kura viltā pret šo plakni, tad un tikai tad, ja tā ir perpendikulāra šīs slīpnes projekcijai ( $p$ ).                                                                                                                                                                      |  | <b>Trapece</b><br>$a, b$ – pamati, $h$ – augstums<br>$S = \frac{a + b}{2} \cdot h$                                                                                                                                                                                                                                                                                                                                                                                           |  |
| <b>Cilindrs</b><br>$R$ – rādiuss, $H$ – augstums<br>$S_{sānu} = 2\pi \cdot R \cdot H$<br>$V = \pi \cdot R^2 \cdot H$                                                                                                                                                                                                                                                                                                                                                      |  | <b>Prizma</b><br>$S_{pam}$ – pamata laukums,<br>$H$ – augstums<br>$V = S_{pam} \cdot H$                                                                                                                                                                                                                                                                                                                                                                                      |  |
| <b>Konuss</b><br>$R$ – rādiuss,<br>$H$ – augstums<br>$l$ – veidule<br>$S_{sānu} = \pi \cdot R \cdot l$<br>$V = \frac{1}{3} \pi \cdot R^2 \cdot H$                                                                                                                                                                                                                                                                                                                         |  | <b>Piramīda</b><br>$S_{pam}$ – pamata laukums,<br>$H$ – augstums<br>$V = \frac{1}{3} S_{pam} \cdot H$                                                                                                                                                                                                                                                                                                                                                                        |  |
| <b>Lode</b><br>$R$ – rādiuss<br>$S = 4\pi \cdot R^2$ $V = \frac{4}{3} \pi \cdot R^3$                                                                                                                                                                                                                                                                                                                                                                                      |  | <b>Regulāra piramīda</b><br>$P$ – pamata perimetrs, $h_s$ – apotēma, $\alpha$ – divplakņu kakta leņķis pie pamata, $S_{sānu}$ – sānu virsmas laukums<br>$S_{sānu} = \frac{1}{2} P \cdot h_s$ $S_{sānu} = \frac{S_{pam}}{\cos \alpha}$                                                                                                                                                                                                                                        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | <b>Piramīdas augstuma pamats</b><br>Ja piramīdas visas sānu šķautnes ir vienādas, tad augstuma pamats ir piramīdas pamatam apvilkta riņķa centrs.<br>Ja visi piramīdas divplakņu kakta leņķi pie pamata ir vienādi, tad augstuma pamats ir piramīdas pamatā ievilkta riņķa centrs.                                                                                                                                                                                           |  |