ALGEBRA - TRIGONOMETRIE

$11^2=121$	$5^2=25$
$12^2=144$	$15^2=225$
$13^2=169$	$25^2=625$
$14^2=196$	$35^2=1225$
$15^2=225$	$45^2=2025$
$16^2=256$	$55^2=3025$
$17^2=289$	$65^2=4225$
$18^2=324$	$75^2=5625$
$19^2=361$	$85^2=7225$
$24^2=576$	$95^2=9025$
$26^2=676$	$105^2=11025$

REGULI DE CALCUL IN **R**

$a^m\cdot a^n=a^{m+n}$, $m,n\in\mathbb{Z}$

$a^m:a^n=a^{m-n}$

$\left(a^m\right)^n=a^{m\cdot n}$

$\left(\frac{a}{b}\right)^n=\frac{a^n}{b^n}$ $b\neq 0$

$a^{-n}=\frac{1}{a^n}$ $a\neq 0$

$\sqrt{a\cdot b}=\sqrt{a}\cdot\sqrt{b}$, $a,b>0$

$\sqrt{\frac{a}{b}}=\frac{\sqrt{a}}{\sqrt{b}}$, $b\neq 0$

$a\sqrt{c}+b\sqrt{c}=(a+b)\sqrt{c}$, $c\geq 0$

$a\sqrt{b}\cdot c\sqrt{d}=ac\sqrt{bd}$, $b,d\geq 0$

MODULUL

$|x|=\begin{cases}x, x\geq 0\\ -x, x<0\end{cases}$

$\sqrt{x^2}=|x|$

$\sqrt{x}^2=x, \forall x\geq 0$

$|x\cdot y|=|x|\cdot|y|$

$|x|=0\Leftrightarrow x=0$

$|x+y|\leq|x|+|y|$, $\forall x,y\in\mathbb{R}$

$|x|=a\in\mathbb{R}_+\Leftrightarrow x=\pm a$

$|x|\leq a\Leftrightarrow -a\leq x\leq a\Leftrightarrow x\in[-a,a]$

$|x|>a\Leftrightarrow x<-a$ sau $x>a$

$\Leftrightarrow x\in(-\infty,-a)\cup(a,+\infty)$, $a>0$

FORMULA RADICALILOR COMPUSI

$\sqrt{A\pm\sqrt{B}}=\sqrt{\frac{A+C}{2}}\pm\sqrt{\frac{A-C}{2}}$ unde $C=\sqrt{A^2-B}$

FORMULE DE CALCUL PRESCURTAT

$(a+b)^2=a^2+2ab+b^2$; $(a-b)^2=a^2-2ab+b^2$

$(a+b)(a-b)=a^2-b^2$

$(a+b+c)^2=a^2+b^2+c^2+2ab+2ac+2bc$

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

$a^3-b^3=(a-b)(a^2+ab+b^2)$

$a^3+b^3=(a+b)(a^2-ab+b^2)$

MEDII : $a,b\in\mathbb{R}_+$

$m_a=\frac{a+b}{2}$; $m_g=\sqrt{ab}$; $m_h=\frac{2ab}{a+b}=\frac{2}{\frac{1}{a}+\frac{1}{b}}$

INEGALITATEA MEDIILOR

$m_h\leq m_g\leq m_a$ cu egalitate pentru $a=b$

MEDIA ARTIMETICA PONDERATA pentru nr. $x_1,x_2,...,x_n$ cu ponderile $p_1,p_2,...,p_n$

$$m_{ap}=\frac{x_1p_1+x_2p_2+...+x_np_n}{p_1+p_2+...+p_n}$$

POLIGOANE REGULATE: $l_n=2R\sin\frac{180^0}{n}$; $a_n=R\cos\frac{180^0}{n}$; $A_n=nR^2\sin\frac{180^0}{n}\cos\frac{180^0}{n}$

TRIUNGHI ECHILATERAL	$l_3=R\sqrt{3}$	$a_3=\frac{R}{2}$	$A_3=\frac{3R^2\sqrt{3}}{4}$
PATRAT	$l_4=R\sqrt{2}$	$a_4=\frac{R\sqrt{2}}{2}$	$A_4=2R^2$
HEXAGON REGULAT	$l_6=R$	$a_6=\frac{R\sqrt{3}}{2}$	$A_6=\frac{3R^2\sqrt{3}}{2}$

TRIGONOMETRIE

$\sin^2x+\cos^2x=1$

$\sin(90^0-x)=\cos x$, $tgx=\frac{\sin x}{\cos x}$, $ctgx=\frac{\cos x}{\sin x}$

$\cos(90^0-x)=\sin x$

$\sin x=\frac{c.o.}{ip}$, $\cos x=\frac{c.al.}{ip}$, $tgx=\frac{c.o.}{c.al.}$, $ctgx=\frac{c.al.}{c.o.}$

x	0^0	30^0	45^0	60^0	90^0
$\sin x$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos x$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\text{tg}\,x$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	-
$\text{ctg}\,x$	-	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0