

Formler till nationellt prov i matematik nivå 1 och matematik 1

PREFIX

Beteckning	T	G	M	k	h	da	d	c	m	μ	n	p
Namn	tera	giga	mega	kilo	hekto	deka	deci	centi	milli	mikro	nano	piko
Tiopotens	10^{12}	10^9	10^6	10^3	10^2	10^1	10^{-1}	10^{-2}	10^{-3}	10^{-6}	10^{-9}	10^{-12}

POTENSER

För reella tal x och y och positiva tal a och b gäller

$$a^x a^y = a^{x+y} \qquad \frac{a^x}{a^y} = a^{x-y} \qquad (a^x)^y = a^{xy} \qquad a^{-x} = \frac{1}{a^x}$$

$$a^x b^x = (ab)^x \qquad \frac{a^x}{b^x} = \left(\frac{a}{b}\right)^x \qquad a^{\frac{1}{n}} = \sqrt[n]{a} \qquad a^0 = 1$$

FUNKTIONER

Räta linjen

$$y = kx + m$$

$$k = \frac{y_2 - y_1}{x_2 - x_1}$$

$$ax + by + c = 0 \qquad \text{där inte både } a \text{ och } b \text{ är noll}$$

Exponentialfunktion

$$y = Ca^x \qquad \text{där } a > 0 \text{ och } a \neq 1$$

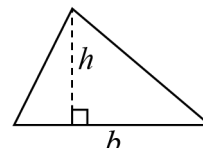
Potensfunktion

$$y = Cx^a$$

GEOMETRI

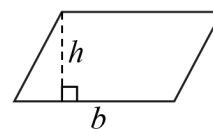
Triangel

$$A = \frac{bh}{2}$$



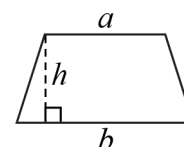
Parallelogram

$$A = bh$$



Parallelltrapets

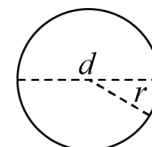
$$A = \frac{h(a+b)}{2}$$



Cirkel

$$A = \pi r^2 = \frac{\pi d^2}{4}$$

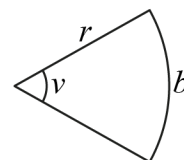
$$O = 2\pi r = \pi d$$

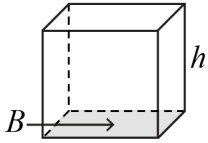
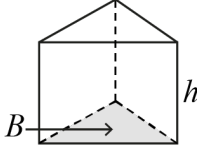
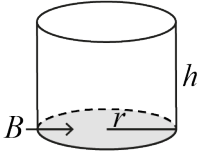
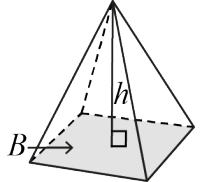
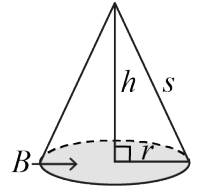
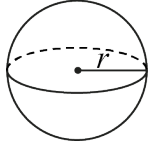
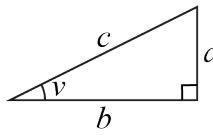


Cirkelsektor

$$A = \frac{v}{360^\circ} \cdot \pi r^2$$

$$b_l = \frac{v}{360^\circ} \cdot 2\pi r$$



Rätblock	$V = Bh$	
Prisma	$V = Bh$	
Cylinder Rak cirkulär	$V = Bh$ Mantelarea $A_m = 2\pi rh$	
Pyramid	$V = \frac{Bh}{3}$	
Kon Rak cirkulär	$V = \frac{Bh}{3}$ Mantelarea $A_m = \pi rs$	
Klot	$V = \frac{4\pi r^3}{3}$ $A = 4\pi r^2$	
Skala	areaskala = (längdskala) ² volym skala = (längdskala) ³	
För sidorna a , b och c i en rätvinklig triangel gäller		
Pythagoras sats	$a^2 + b^2 = c^2$	
Trigonometri	$\sin v = \frac{a}{c}$ $\cos v = \frac{b}{c}$ $\tan v = \frac{a}{b}$	

VEKTORER

För vektorerna $\vec{u} = (a_x, a_y)$ och $\vec{v} = (b_x, b_y)$ samt skalären s gäller

$$\vec{u} + \vec{v} = (a_x + b_x, a_y + b_y) \qquad \vec{u} - \vec{v} = (a_x - b_x, a_y - b_y)$$

$$s \cdot \vec{u} = (sa_x, sa_y) \qquad |\vec{u}| = \sqrt{a_x^2 + a_y^2}$$