Formler till nationellt prov i 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

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

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

FUNKTIONER

Räta linjen

$$y = kx + m$$

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

$ax + by + c = 0$ där inte både a och b är noll

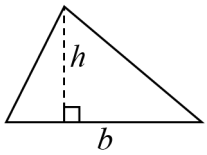
Exponentialfunktion $y = Ca^x$ där $a > 0$ och $a \neq 1$

Potensfunktion $y = Cx^a$

GEOMETRI

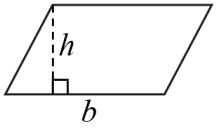
Triangel

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



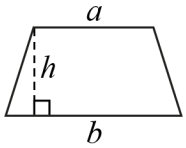
Parallellogram

$$A = bh$$



Parallelltrapets

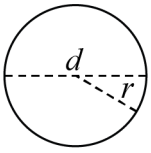
$$A = \frac{h(a+b)}{2}$$



Cirkel

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

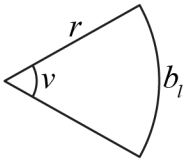
$$O = 2\pi r = \pi d$$



Cirkelsektor

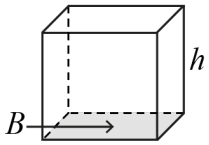
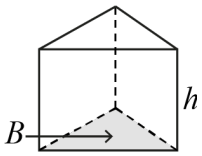
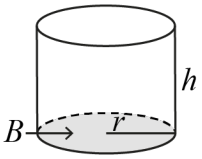
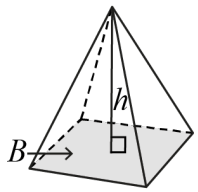
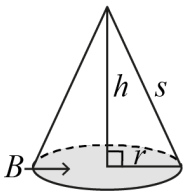
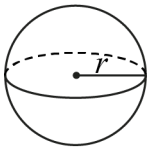
$$A = \frac{v}{360°} \cdot \pi r^2$$

$$b_l = \frac{v}{360°} \cdot 2\pi r$$



© Skolverket

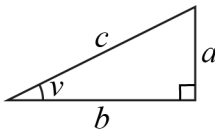
Gäller från och med 2021-07-01

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

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

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

© Skolverket