Formler till nationellt prov i matematik 1

PREFIX

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

$a^x a^y = a^{x+y}$ $\quad \dfrac{a^x}{a^y} = a^{x-y}$ $\quad \dfrac{a^x}{b^x} = \left(\dfrac{a}{b}\right)^x$ $\quad a^{-x} = \dfrac{1}{a^x}$

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

FUNKTIONS-LÄRA

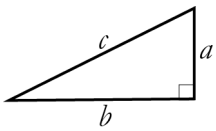
Räta linjen $y = kx + m$ om $y = kx$ är y proportionell mot x

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

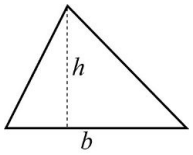
Potensfunktion $y = Cx^a$ där C och a är konstanter

GEOMETRI

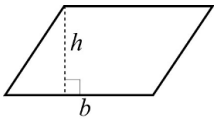
Pythagoras sats $a^2 + b^2 = c^2$



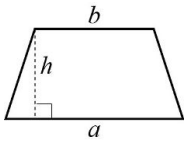
Triangel $\text{area} = \dfrac{bh}{2}$



Parallellogram $\text{area} = bh$



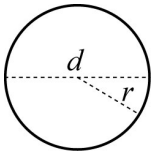
Parallelltrapets $\text{area} = \dfrac{h\left(a+b\right)}{2}$



Cirkel

$\text{area} = \pi r^2 = \dfrac{\pi d^2}{4}$

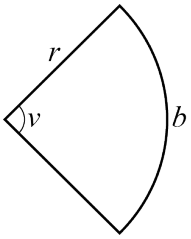
$\text{omkrets} = 2\pi r = \pi d$



Cirkelsektor

$\text{bågen } b = \dfrac{v}{360°} \cdot 2\pi r$

$\text{area} = \dfrac{v}{360°} \cdot \pi r^2 = \dfrac{br}{2}$



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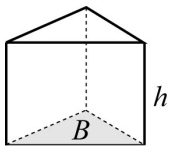
Prisma

volym = Bh

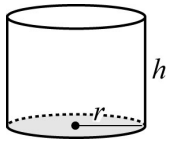


Cylinder

Rak cirkulär cylinder

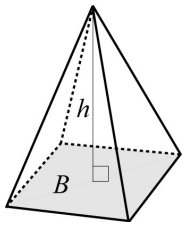
volym = $\pi r^2 h$

mantelarea = $2\pi r h$



Pyramid

volym = $\dfrac{Bh}{3}$

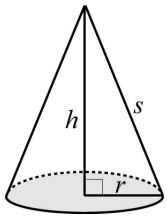


Kon

Rak cirkulär kon

volym = $\dfrac{\pi r^2 h}{3}$

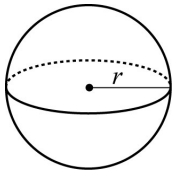
mantelarea = $\pi r s$



Klot

volym = $\dfrac{4\pi r^3}{3}$

area = $4\pi r^2$



Skala

areaskala = (längdskala)^2

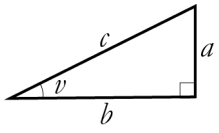
volymskala = (längdskala)^3

TRIGONOMETRI

Rätvinklig triangel

Definitioner

$\sin v = \dfrac{a}{c}$ $\cos v = \dfrac{b}{c}$ $\tan v = \dfrac{a}{b}$

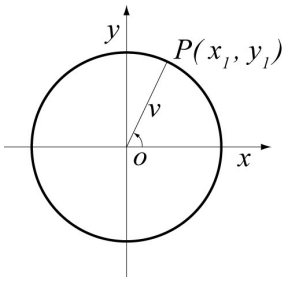


Enhetscirkel

OP är radie i en enhetscirkel. Koordinaterna för *P* är (x_1, y_1)

Definitioner

$\sin v = y_1$ $\cos v = x_1$ $\tan v = \dfrac{y_1}{x_1}$



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