

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

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

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

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 $a \neq 1$

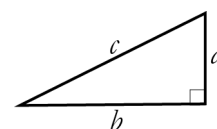
Potensfunktion

$y = Cx^a$ där C och a är konstanter

GEOMETRI

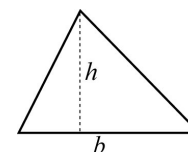
Pythagoras sats

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



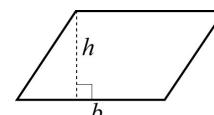
Triangel

$$\text{area} = \frac{bh}{2}$$



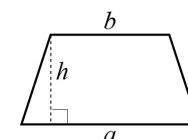
Parallelogram

$$\text{area} = bh$$



Parallelltrapets

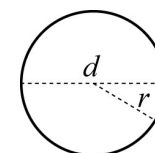
$$\text{area} = \frac{h(a+b)}{2}$$



Cirkel

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

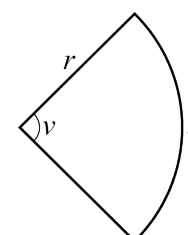
$$\text{omkrets} = 2\pi r = \pi d$$



Cirkelsektor

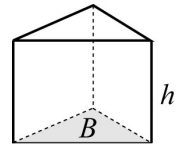
$$\text{bågen } b = \frac{\nu}{360^\circ} \cdot 2\pi r$$

$$\text{area} = \frac{\nu}{360^\circ} \cdot \pi r^2 = \frac{br}{2}$$



Prisma

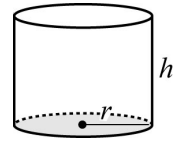
$$\text{volym} = Bh$$

**Cylinder**

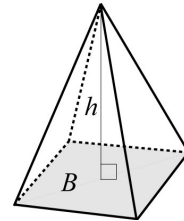
Rak cirkulär cylinder

$$\text{volym} = \pi r^2 h$$

$$\text{mantelarea} = 2\pi r h$$

**Pyramid**

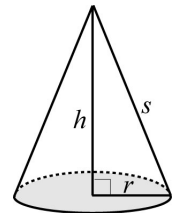
$$\text{volym} = \frac{Bh}{3}$$

**Kon**

Rak cirkulär kon

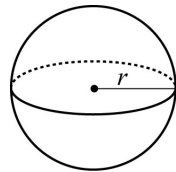
$$\text{volym} = \frac{\pi r^2 h}{3}$$

$$\text{mantelarea} = \pi r s$$

**Klot**

$$\text{volym} = \frac{4\pi r^3}{3}$$

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

**Skala**

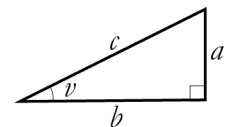
$$\text{areaskala} = (\text{längdskala})^2$$

$$\text{volymskala} = (\text{längdskala})^3$$

TRIGONOMETRI Rätvinklig triangel

Definitioner

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

**Enhetscirkel**

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

Definitioner

$$\sin v = y_1 \quad \cos v = x_1 \quad \tan v = \frac{y_1}{x_1}$$

