Formúlublað

Vaxtareikningar

$$v = Hpt \qquad H_n = H\left(1 + \frac{p}{m}\right)^{mn}$$
$$H_n = H(1 \pm p)^n \qquad H_n = He^{pn}$$

Rétthyrndur þríhyrningur

$$\cos v = \frac{\text{Aðl}}{\text{Lang}} \qquad \sin v = \frac{\text{Mótl}}{\text{Lang}} \qquad \tan v = \frac{\text{Mótl}}{\text{Aðl}}$$

Jafna beinnar línu

$$y = hx + k \qquad y - y_1 = h(x - x_1)$$

Fjarlægðarformúla

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Hallatala línu

$$h = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Miðpunktur striks

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

Lausnaformúla

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Samhverfuás

$$x = \frac{-b}{2a}$$

Lograr

$$\lg(AB) = \lg A + \lg B \qquad \lg\left(\frac{A}{B}\right) = \lg A - \lg B$$
$$\lg A^y = y \lg A$$

Umraðanir og samantektir

$$P(n,k) = \frac{n!}{(n-k)!}$$
$$C(n,k) = \binom{n}{k} = \frac{P(n,k)}{k!} = \frac{n!}{(n-k)!k!}$$

Hornaföll

$$\sin(u \pm v) = \sin u \cdot \cos v \pm \cos u \cdot \sin v$$
$$\cos(u \pm v) = \cos u \cdot \cos v \mp \sin u \cdot \sin v$$
$$\sin 2u = 2 \sin u \cdot \cos u$$
$$\cos 2u = \cos^2 u - \sin^2 u$$
$$1 = \cos^2 u + \sin^2 u$$
$$\tan u = \frac{\sin u}{\cos u}$$

Vigrar

$$\vec{u} \cdot \vec{v} = |\vec{u}| \cdot |\vec{v}| \cdot \cos(\vec{u}, \vec{v})$$
$$|\vec{u} \times \vec{v}| = |\vec{u}| \cdot |\vec{v}| \cdot \sin(\vec{u}, \vec{v})$$

Afleiður

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

Runur og raðir

$$a_n = a_1 + (n-1)d$$
$$a_n = a_1 \cdot k^{n-1}$$
$$s = \frac{a_1}{1-k}$$
$$s_n = \frac{n(a_1 + a_n)}{2}$$
$$s_n = \frac{a_1(k^n - 1)}{k - 1}$$

Töluleg heildun

$$T = \frac{f(x_1) + f(x_2)}{2} \cdot h$$
$$M = f(m) \cdot h$$
$$S = \frac{T + 2M}{3}$$

Rúmmál

$$V_x = \pi \int_a^b \big(f(x)\big)^2 \, dx$$
$$V_x = \pi \int_a^b \Big(\big(f(x)\big)^2 - \big(g(x)\big)^2\Big) dx$$
$$V_{y=k} = \pi \int_a^b \big(f(x) - k\big)^2 \, dx$$
$$V_y = 2\pi \int_a^b x\big|f(x)\big| \, dx$$
$$V_y = 2\pi \int_a^b x\big|f(x) - g(x)\big| \, dx$$
$$V_{x=k} = 2\pi \int_a^b (x-k)\big|f(x) - g(x)\big| \, dx \qquad \text{ef } k \le a < b$$

Bogalengd

$$s = \int_a^b \sqrt{1 + (f'(x))^2} \, dx$$

Yfirborðsflatarmál

$$Y_x = 2\pi \int_a^b \big|f(x)\big| \sqrt{1 + (f'(x))^2} \, dx$$
$$Y_y = 2\pi \int_a^b |x| \sqrt{1 + (f'(x))^2} \, dx$$

Tvinntölur

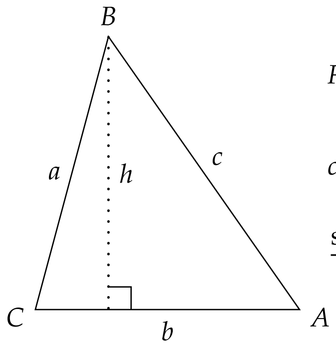
$$P(z) = \left(z^2 - 2\mathrm{Re}(w) \cdot z + |w|^2\right) \cdot Q(z)$$
$$e^{ix} = \cos x + i \sin x$$

Deildajöfnur

$$y = k_1 e^{\alpha_1 x} + k_2 e^{\alpha_2 x}$$
$$y = e^{px}(k_1 \cos(qx) + k_2 \sin(qx))$$
$$y = e^{\alpha x}(k_1 x + k_2)$$

Formúlublað

Þríhyrningur

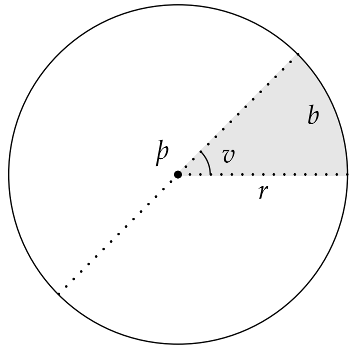


$$F = \frac{ab\sin C}{2}$$

$$c^2 = a^2 + b^2 - 2ab\cos C$$

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Hringur



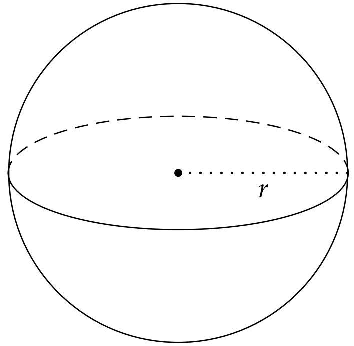
$$U = 2\pi r = þ\pi$$

$$F = \pi r^2$$

$$b = \frac{v}{360^\circ} \cdot U$$

$$F_g = \frac{v}{360^\circ} \cdot F$$

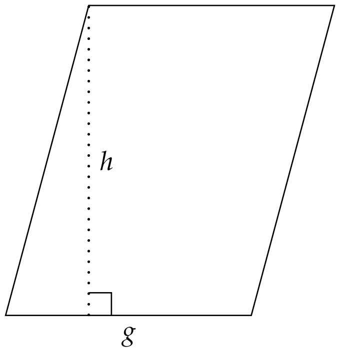
Kúla



$$R = \frac{4\pi r^3}{3}$$

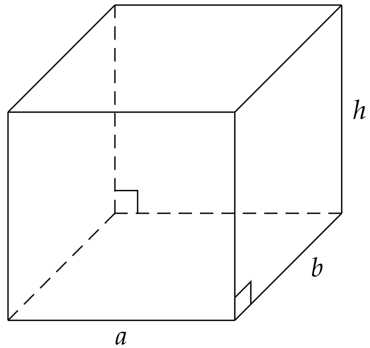
$$Y = 4\pi r^2$$

Samsíðungur



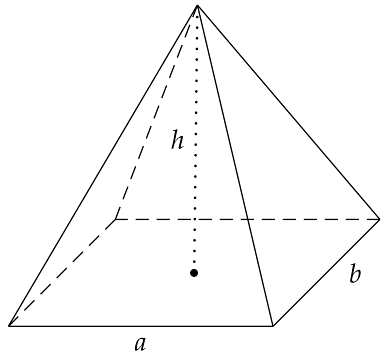
$$F = gh$$

Kassi



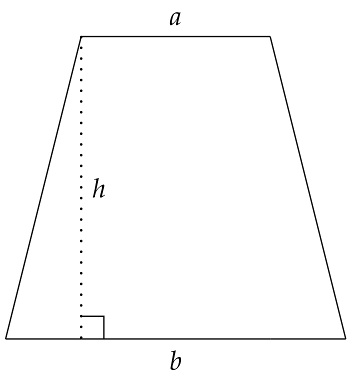
$$R = abh$$

Pýramídi



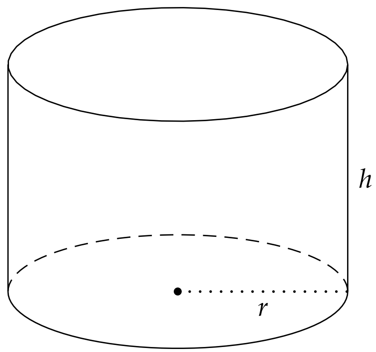
$$R = \frac{abh}{3}$$

Trapisa



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

Sívalningur

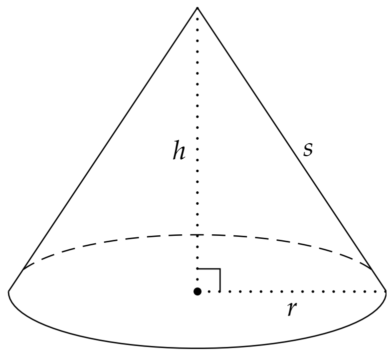


$$R = \pi r^2 h$$

$$M = 2\pi r h$$

$$Y = M + 2\pi r^2$$

Keila



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

$$M = \pi r s$$

$$Y = M + \pi r^2$$

Formúlublað

Deildunarreglur (Diffrun)

$$\frac{d}{dx}\,k = 0 \qquad (k \text{ er fasti})$$

$$\frac{d}{dx}\,kf(x) = k\left(\frac{d}{dx}\,f(x)\right) \qquad (k \text{ er fasti})$$

$$\frac{d}{dx}\,(f(x) \pm g(x)) = f'(x) \pm g'(x)$$

$$\frac{d}{dx}\,x = 1$$

$$\frac{d}{dx}\,\sqrt{x} = \frac{1}{2\sqrt{x}}$$

$$\frac{d}{dx}\,x^n = nx^{n-1}$$

$$\frac{d}{dx}\,a^x = \ln a \cdot a^x$$

$$\frac{d}{dx}\,|x| = \frac{x}{|x|}$$

$$\frac{d}{dx}\,e^{ax} = ae^{ax}$$

$$\frac{d}{dx}\,\sin x = \cos x$$

$$\frac{d}{dx}\,\sin ax = a\cos ax$$

$$\frac{d}{dx}\,\cos x = -\sin x$$

$$\frac{d}{dx}\,\cos ax = -a\sin ax$$

$$\frac{d}{dx}\,\tan x = \frac{1}{\cos^2 x} = 1 + \tan^2 x$$

$$\frac{d}{dx}\,\tan ax = \frac{a}{\cos^2 ax} = a(1 + \tan^2 ax)$$

$$\frac{d}{dx}\,\ln|x| = \frac{1}{x}$$

$$\frac{d}{dx}\,\ln|ax+b| = \frac{a}{ax+b}$$

$$\frac{d}{dx}\,\sin^{-1} x = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}\,\cos^{-1} x = -\frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}\,\tan^{-1} x = \frac{1}{1+x^2}$$

Keðjuregla

$$\frac{d}{dx}\,f(g(x)) = f'(g(x)) \cdot g'(x)$$

Samsett föll

$$\frac{d}{dx}\left(f(x) \cdot g(x)\right) = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

$$\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{(g(x))^2}$$

Hlutheildun

$$\int f(u)g'(u)\,du = f(u)g(u) - \int f'(u)g(u)\,du$$

Meðalgildi

$$m(f) = \frac{1}{b-a}\int_a^b f(u)\,du$$

Heildunarreglur (Tegrun)

$$\int du = u + C$$

$$\int k\,du = ku + C \qquad (k \text{ er fasti})$$

$$\int (du \pm dv) = \int du \pm \int dv$$

$$\int u^n\,du = \frac{u^{n+1}}{n+1} + C \qquad (n \neq -1)$$

$$\int \frac{du}{u} = \ln|u| + C$$

$$\int a^u\,du = \frac{a^u}{\ln a} + C \qquad a > 0, a \neq 1$$

$$\int e^u\,du = e^u + C$$

$$\int e^{bu}\,du = \frac{e^{bu}}{b} + C \qquad (b \neq 0)$$

$$\int \sin u\,du = -\cos u + C$$

$$\int \sin bu\,du = -\frac{\cos bu}{b} + C \qquad (b \neq 0)$$

$$\int \cos u\,du = \sin u + C$$

$$\int \cos bu\,du = \frac{\sin bu}{b} + C \qquad (b \neq 0)$$

$$\int \frac{1}{u+b}\,du = \ln|u+b| + C$$

$$\int \frac{1}{au+b}\,du = \frac{1}{a}\ln|au+b| + C$$

$$\int \frac{1}{\cos^2 u}\,du = \tan u + C$$

$$\int \frac{1}{\sin^2 u}\,du = -\frac{1}{\tan u} + C$$

$$\int \frac{\tan u}{\cos u}\,du = \frac{1}{\cos u} + C$$

$$\int \tan u\,du = -\ln|\cos u| + C$$

$$\int \frac{1}{\tan u}\,du = \ln|\sin u| + C$$

$$\int \frac{du}{a^2+u^2} = \frac{1}{a}\tan^{-1}\left(\frac{u}{a}\right) + C$$

$$\int \frac{du}{a^2-u^2} = \frac{1}{2a}\ln\left|\frac{u+a}{u-a}\right| + C$$