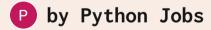
Trigonometriya Asoslari: 1-sinf, cos, tan ishoralari

Ushbu taqdimot trigonometriya o'qituvchilari uchun mo'ljallangan. Unda asosiy tushunchalar, ishoralar va o'quv jarayonida qo'llaniladigan usullar ko'rib chiqiladi. Mavzular sodda va tushunarli tilda bayon etiladi.



Trigonometrik Funksiyalarning Ta'rifi

Asosiy Funksiyalar

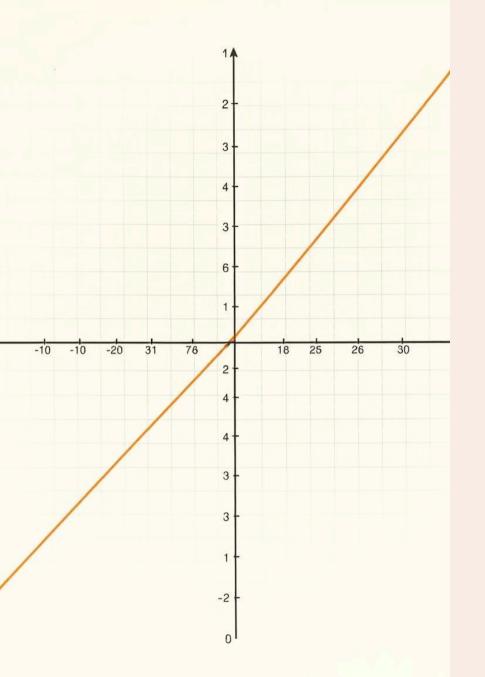
Sinus (sin), kosinus (cos), tangens (tan) va kotangens (ctg) trigonometriyaning asosiy funksiyalari hisoblanadi.

Birlik Aylana

Birlik aylana koordinatalari trigonometrik funksiyalarni aniqlashda muhim rol o'ynaydi.

Aniqanish Sohasi

Har bir trigonometrik funksiyaning aniqlanish sohasi mavjud. Buni bilish tenglamalarni yechishda muhim.



Choraklar bo'yicha Ishoralar

Chorak	Sinus (sin)	Kosinus (cos)	Tangens (tan)
I	+	+	+
II	+	-	-
III	-	-	+
IV	-	+	-

Trigonometrik Funksiyalarning Juft va **Toqligi**

Juft Funksiya

Kosinus (cos) - juft funksiya: cos(-a) = cos(a). Grafiki y o'qiga nisbatan simmetrik.

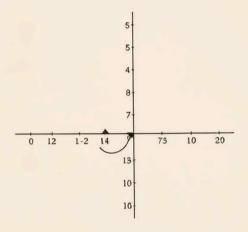
Toq Funksiyalar

Sinus (sin), tangens (tan) va kotangens (ctg) - toq funksivalar. sin(-a) = sin(a)

Simmetriya

Tog funksiyalar koordinata boshiga nisbatan simmetrik. Grafiklarning simmetriyasiga e'tibor bering.

Cocosine function



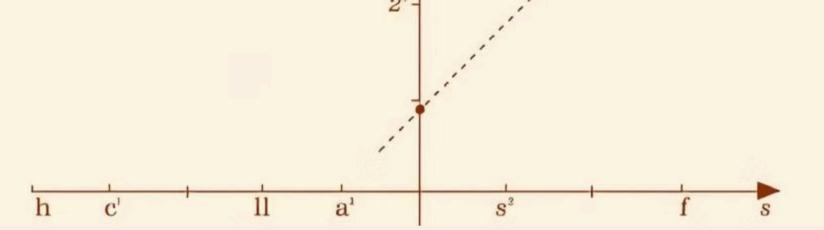
Since

$$-1 - (1-1) + 2y((-1-1))$$

$$= 2(\times 2_{1}^{-}) \left(= 1_{y}^{-} \right)$$

$$-s$$

$$-0$$



a va -a Burchaklarning Trigonometrik Funksiyalari



sin(-a) = -sin(a)



$$cos(-a) = cos(a)$$



$$tan(-a) = -tan(a)$$

ctg(-a) = -ctg(a)

Asosiy Trigonometrik Ayniyatlar

1

Pifagor Ayniyati

$$\sin^2(a) + \cos^2(a) = 1$$

2

Tangens

$$tan(a) = sin(a) / cos(a)$$

3

Kotangens

$$ctg(a) = cos(a) / sin(a)$$

4

O'zaro Bog'liqlik

$$tan(a) * ctg(a) = 1$$

 $\zeta_{a}: \left(\left| E_{z} \right| + \frac{38_{0x}}{26x^{2}} + \frac{8_{b}}{4} \times \frac{7_{0z}}{4} \right) = R_{b} = \left(\left| \frac{0_{nd}}{1_{0}} \right| \right) =$ $E_c: \left(= 2_2 + \frac{3_{xx}}{2x} + \frac{28_x}{22_x} = +1 \right) h_c = \left(\frac{N(0)}{25} + \frac{22^2}{25} + 22 \right)$ Trigonmetric==13) Ibentiting $3_{i}: I = \left(B_{\underline{x}} + = \frac{1}{3}^{i}\right) = V_{\underline{x}} = N = \frac{f}{5} + F2_{\underline{x}} = \left(\frac{ND^{2}_{\underline{x}} + \frac{MM_{\underline{x}\underline{y}}}{212g} + \frac{B\sigma^{2}}{1_{3}}\right) = \frac{M_{\underline{x}}N}{2\sigma d} \qquad E \Rightarrow \left(\frac{8c_{\underline{x}}}{c_{\underline{x}}^{2} - 10}\right) = \frac{1}{2\sigma}$ $\frac{7}{2} \Rightarrow \frac{3n_{\mathcal{Z}} 2^{\frac{\pi}{2}} + + H_{\mathcal{X}_{\mathcal{L}}}}{2a \quad 3x - + 2a_{\mathcal{X}}} = M_{2} = \left(\frac{M_{\mathcal{X}}}{\frac{p_{\mathcal{X}}}{2a^{2}}}\right) \Rightarrow R_{3} = \frac{32y|^{3}}{6a^{3}} \qquad \text{Thy off} + hR \Rightarrow \left(\frac{M^{\frac{7}{2}}}{22a}\right) \Rightarrow \frac{1}{67}$ $(1 + P_{\lambda} = \frac{2}{2} + Ba)^{2}_{i} =) - W + (!(4)) + H(a) + X_{a} = (4 + F + 2)$ $F_x \cdot hg (fa = She al = 24 f = 9)$: $X = P \mid a = + H \mid \alpha$ + $\frac{1}{3}$ + $H \mid (10^3) \mid D_x = \Rightarrow 2 = \left(\frac{7}{0} + \frac{23^2}{23}\right)$ Pey + h (f = Bir owide+++ = + A) $\vec{z}_{i} x_{i} = \frac{\left(\hat{\theta} \cdot 13\chi}{23.5} + \frac{0}{4} + \frac{2}{1} = 22 + \text{Wea} + 22\chi = \frac{1}{4} + \text{H}\left(Px\frac{2}{5}\right) + 4\right)$ $R_{8} = (4)\frac{0^{7}}{5} \Rightarrow 2_{8} \Rightarrow k_{\epsilon} = +R_{14} + + \frac{20^{8}}{13_{8}} \Rightarrow \frac{E_{1,1}}{7}$ Threst = Falest rearing ignits at add into $I_{i,j} \rightarrow F_{i,j} = \frac{11}{5} + H\left(\frac{13x}{117x}\right) = \Rightarrow H_{i,j} = \left(\frac{11 + \sqrt{9}y}{Ax^{-1}132x}\right) + H_{i,k} = \Rightarrow \left(\frac{B_{i,k}}{C_{i,k}}, \frac{780}{23x}\right) + H_{i,k} = \Rightarrow \left(\frac{B_{i,k}}{C_{i,k}}, \frac{780}{23x}\right) + H_{i,k} = \Rightarrow \frac{11}{7}$ with high loble. $\mathbf{J}_{z} = \begin{pmatrix} \delta_{\underline{n}\underline{x}} \begin{bmatrix} \delta_{\underline{q}\underline{x}} \\ 22x \end{bmatrix} \begin{pmatrix} \delta_{\underline{q}\underline{x}} \end{bmatrix} + \mathsf{Bla} = 302 + \mathsf{h} = 2\mathsf{I}_{\underline{g}} + \mathsf{W}(\alpha_{\underline{q}} \to \mathsf{Z}_{\underline{h}} = \frac{\left(\delta_{\underline{q}\underline{y}} \right)^{\beta_{\underline{g}}\underline{g}}}{231g}) \\ & C \frac{22}{07} + \frac{10}{3} \end{pmatrix}$ Tod fustade of this $\frac{1}{5} = \frac{2^{\frac{2}{3}^2}}{5} + 1 R_s = h \int + \left(\frac{h_{sy}}{5} + \frac{0}{5}\right)$ $\frac{R_{3y}}{3} = \frac{\left(\frac{\ln x}{5} + \frac{1}{5} + \frac{1}{5}\right)}{\left(\frac{1}{5} + \frac{1}{5}\right)}$ $\frac{R_{3y}}{3} = \frac{2^{\frac{1}{3}^3}}{213}$ $\frac{1}{5} = \frac{\left(\frac{\ln x}{5} + \frac{1}{5} + \frac{1}{5}\right)}{\left(\frac{1}{5} + \frac{1}{5}\right)}$ $\frac{R_{3y}}{3} = \frac{2^{\frac{1}{3}^3}}{213}$ $\frac{1}{5} = \frac{1}{5} + \frac{$ Made with Gamma

Qo'shimcha Trigonometrik Ayniyatlar

Ikki Karra Burchak

sin(2a) = 2sin(a)cos(a)

Kosinus

$$cos(2a) = cos2(a) - sin2(a)$$

Tangens

tan(2a) = 2tan(a) / (1 - tan²(a))

Trigorrometric - Double Angle

$$(2 = 2 = 410)$$

 $(3 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$
 $(4 + 40)$

$$x' = +2 = +3) = \cdot = 1T + 43 + 17$$

$$x' + 2 + 8.3) = \cdot = 10 + 50$$

$$\frac{(++3+49)}{(++49+44)} = \frac{10+2}{2/\epsilon} = \frac{(4+3)}{2/\epsilon}$$

$$(+ + 3 = = 60) = \cdot = + +85 + 10$$

$$\chi' = +3 + +4) = \cdot = f + 02 - 13$$

$$x' = +2 = 4?) = \cdot = 4x + 45.60$$

$$x=+3+3$$
) = $\cdot = + + 48 + 3$)

$$xf+=4$$

$$f_{x} = (may = 2x + 16 +$$

$$+x: Airgag = +2 = = 4 - +5$$

$$+x:bobleg = 4 + f - b.9$$



Yig'indi va Ayirmalarning **Trigonometrik Funksiyalari**

Sinus

$$sin(a \pm b) = sin(a)cos(b) \pm cos(a)sin(b)$$

Kosinus

3

$$cos(a \pm b) = cos(a)cos(b) \mp sin(a)sin(b)$$

Tangens

$$tan(a \pm b) = (tan(a) \pm tan(b)) / (1 \mp tan(a)tan(b))$$

Trigonoometric Dentities

Tniffoments of angless:

$$2x = ++7 = + = [10+25]$$

 $+ f = angile$

$$3x = +:9, = + +=2, = 9$$

$$2.1z = +:5, = -+ = 5x, +8$$

$$5.1z = + :4, = = + = 2 = 30$$

$$3x = + + 25 = + = 3, +3$$

1 difference:

$$+21z = + +28 = = \times 23$$

$$+2x+9$$

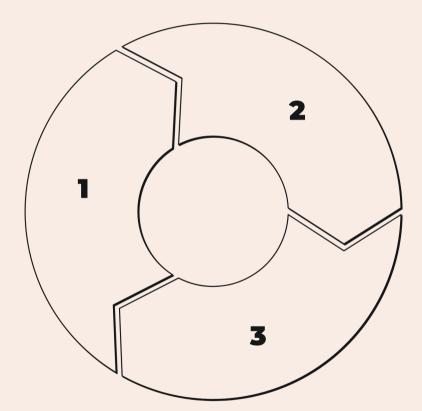
$$= x. 2.5$$

$$\frac{\text{Sum=9}}{\text{x2=5}}$$

Trigonometrik Tenglamalarni Yechish



sin(x) = a, cos(x) = a



Tangens

tan(x) = a

Umumiy Yechimlar

Xususiy yechimlar

Xulosa

Ushbu taqdimotda trigonometrik funksiyalar va ayniyatlarning asosiy tushunchalari ko'rib chiqildi. Olingan bilimlarni amaliyotda qo'llash va kelgusi mavzularga tayyorgarlik ko'rish muhim. E'tiboringiz uchun rahmat!

