Agzamxodjaeva M.Sh

10-Mavzu: Teskari trigonometrik funsiyalar

Teskari trigonometric funksiyalar

Agar $y = sinx$ ***funksiyaning aniqlanish sohasini qisqartirib, uni*** $D(y) = \left[-\frac{\pi}{2}; \frac{\pi}{2}\right]$ ***deb olsak, u holda har bir tayinlangan*** $y \in [-1; 1]$***da*** $sinx = y$ ***tenglama yagona yechimga ega bo`ladi, ya`ni teskari funksiya mavjud. Demak, aniqlanish sohasi*** $D(sin) = \left[-\frac{\pi}{2}; \frac{\pi}{2}\right]$ ***bo`lgan*** $y = sinx$ ***funksiyaga teskari funksiya mavjud bo`lib, u arksinus deyiladi va*** $y = arcsinx$ ***shaklda yoziladi.***

$y = cosx, D(cos) = [0; \pi]; y = tgx, D(tg) = \left(-\frac{\pi}{2}; \frac{\pi}{2}\right), y = ctgx, D(ctg) = (0; \pi)$ ***funksiyalarga teskari funksiyalar*** $y = arccosx, y = arctgx$ ***va*** $y = arcctgx$

Teskari trigonometrik funksiyalar qiymatlari

a	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$arcsina$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
$arccosa$	$\frac{\pi}{2}$	$\frac{\pi}{3}$	$\frac{\pi}{4}$	$\frac{\pi}{6}$	0

b	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$
$arctgb$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$
$arcctgb$	$\frac{\pi}{2}$	$\frac{\pi}{3}$	$\frac{\pi}{4}$	$\frac{\pi}{6}$

Teskari trigonometrik funksiyalarning asosiy xossalari

1. Aniqlanish sohasi:

$$D(arcsin) = D(arccos) = [-1; 1],$$

$$D(arctg) = D(arcctg) = R$$

2. Arksinus va arktangenslar toq funksiya:

$$arcsin(-x) = -arcsinx, arctg(-x) = -arctgx$$

3. Arkkosinus va arkkotangenslar uchun

$$arccos(-x) = \pi - arccosx,$$

$$arcctg(-x) = \pi - arcctgx$$

Tengliklar o`rinli

Teskari trigonometrik funksiyalarning asosiy xossalari

4. $arcsin(sinx) = x,\ -\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$
5. $sin(arcsinx) = x,\ -1 \leq x \leq 1$
6. $arccos(cosx) = x, 0 \leq x \leq \pi$
7. $cos(arccosx) = x, -1 \leq x \leq 1$
8. $arctg(tgx) = x, -\frac{\pi}{2} < x < \frac{\pi}{2}$
9. $tg(arctgx) = x, x \in R$
10. $arcctg(ctgx) = x, 0 < x < \pi$
11. $ctg(arcctgx) = x, x \in R$