Functia arccosinus

$f:[0,\pi]\to[-1,1]$

$f(x)=\cos x$

$g:[-1,1]\to[0,\pi]$

$g(x)=\arccos x$

$fog=1_{[-1,1]}$

$\cos[arc\sin(x)=x,\forall x\in[-1,1]$

$gof=1_{[0,\pi]}$

$\arccos(\cos(x))=x,\forall x\in[0,\pi]$

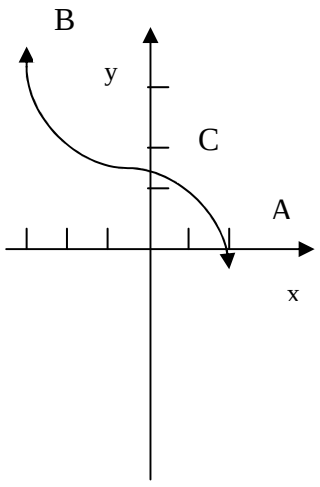
$\arcsin x+\arccos x=\frac{\pi}{2},\forall x\in[-1,1].$

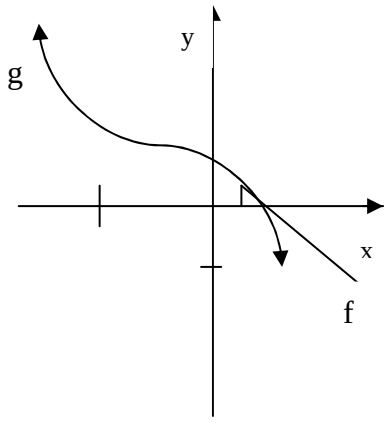
$\arcsin(-x)=-\arcsin(x),x\in[-1,1]$

$\arccos(-x)=\pi-\arccos x,\forall x\in[-1,1]$

Graficul functiei arccosinus

x	-1	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	1
g(x)	π	$\frac{3\pi}{4}$	$\frac{2\pi}{3}$	$\frac{\pi}{2}$	$\frac{\pi}{3}$	$\frac{\pi}{4}$	0





Proprietatile functiei arccos:

1) Intersectia gf cu axele de coordonate :

$G_g \cap Ox : y = 0 \to x = 1, A(1,0)$

$G_g \cap Oy : x = 0 \to y = \frac{\pi}{2}, C(0, \frac{\pi}{2})$

2) Paritatea :

- nu, arcos(-x)= $\pi - \arccos x, \forall x \in [-1,1]$

3) Simetria graficului:

- in raport cu punctual C$(0, \frac{\pi}{2})$

$$\frac{\pi}{2} = \frac{\arccos(-x) + \arccos x,}{2} \forall x \in [=1,1]$$

4) Monotonia functiei:

-strict crescatoare pe [-1,1]

5) Marginire.Valori extreme:

- functie marginita, $0 \le g(x) \le \pi$
- min $g(x) = 0 = g(1), A(1,0)$;
- max g(x)= $\pi = g(-1), B(-1, \pi)$

6) Convezitate si concavitate:

- convexa pe [-1,0]
- concave pe [0,1]
- x=0,punct de inflexiune pentru functie

7) Continuitate:

- curba continua

8) Rezolvarea ecuatiei g(x)=0:

- arccos x=0 $\leftrightarrow x = 1$

9) Semnul functiei:

- arccos x>0, $\forall x \in [-1,1]$

10) Bijectivitatea

- da

11) Functia inversa

$f : [0, \pi], f(x) = \cos x,$

$-\cos(\arccos x) = x, \forall x \in [-1,1]$

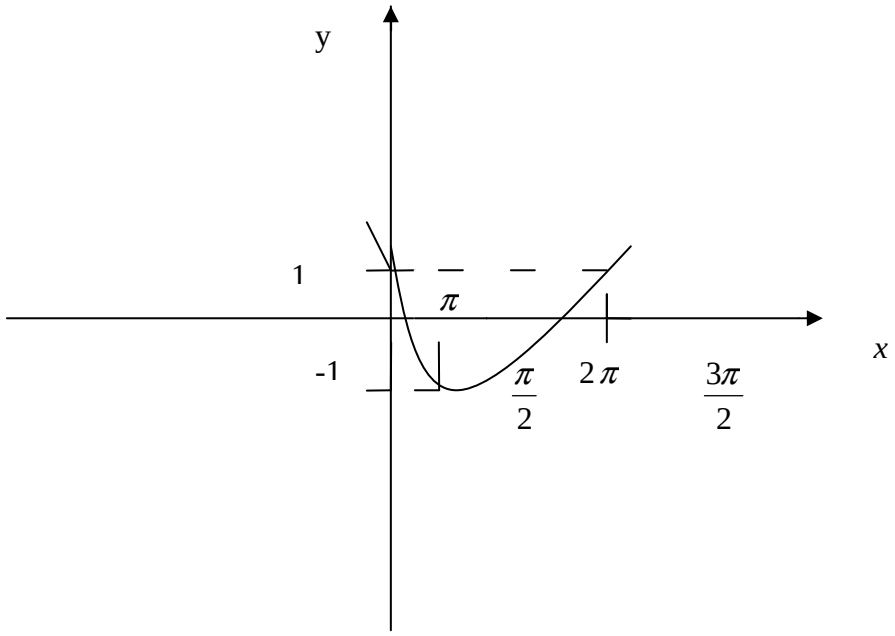
$-\arccos(\cos x) = x, \forall x \in [0, \pi]$

Functia cosinus

$f : R \to [-1,1],\ f(x) = \cos x$

Graficul functiei cosinus.

x	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
f(x)=cos x	1	0	-1	0	1



Proprietati:	pe $[0,2\pi]$	pe R
1) Intersectia graficului cu axele de coordonate:	x =0 $\rightarrow f(0)=1, A(0,1)$	A(0,1)
$G_f \cap Oy$:	y =0 $\rightarrow x_1=\frac{\pi}{2}, x_2=\frac{3\pi}{2}$	$(\frac{\pi}{3}+2k\pi,0)$ $(\frac{3\pi}{2}+2k\pi,0)$
$G_f \cap Ox$:	$B(\frac{\pi}{2},0), D(\frac{3\pi}{2},0)$	
2) Paritate	_____	para f (x)=f(x),x$\in R$
3) Simetria Graficului	_____	in raport cu axa Oy
4) Monotonie:	x | 0 $\frac{\pi}{2},\pi,\frac{3\pi}{2}2\pi$ f(x) | 1 0 -1 0 1	pe $[2k\pi,\pi+2k\pi]$, pe $[\pi+2k\pi,2\pi+2k\pi]$
Strict crescatoare ↗	pe $[0,\pi]$, f, *este.s.d*	
Strict descrescatoare ↘	pe $[\pi,2\pi]$, f, *este.s.c*	
5)Marginire valori extreme	$-1\le f(x)\le 1$ max, $f(x)=1=f(0), A(0,1)$ min, $f(x)=-1=f(x), C(\pi,-1)$	$-1\le f(x)\le 1$ max, $f(x)=-1$ $=f(\pi+2k\pi)$
6) Cnvexitate si concavitate	concave pe $[0\frac{\pi}{2}],[\frac{3\pi}{2},2\pi]$ convexa pe $[\frac{\pi}{2},\frac{3\pi}{2}]$	$[-\frac{\pi}{2}+2k\pi, k\in Z]$ $[\frac{\pi}{2}+2k\pi,\frac{3k\pi}{2}+2k\pi]$
7) Continuitate	Curba continua	Curba continua
8)Rezolvarea ecuatiei f(x)=0	$x_1=\frac{\pi}{2}, x_2=\frac{3\pi}{2}$	$x_{1,k}=\frac{\pi}{2}+2k\pi,$ $x_{2,k}=\frac{3\pi}{2}+2k\pi,$

9) Semnul functiei	$\cos x>0 \quad x\in [0,\frac{\pi}{2})\cup(\frac{3\pi}{2},2\pi)$ $\cos<0 \quad x\in (\frac{\pi}{2},\frac{3\pi}{2})$	$x\in (\frac{\pi}{2}+2k\pi,\frac{3\pi}{2}+2k\pi)$ $x\in (-\frac{\pi}{2}+2k\pi,\frac{\pi}{2}+2k\pi)$
10) Bijectivitatea	nu	nu
11) Restrictie bijectiva	$[0,\pi]$	$[2k\pi,\pi+2k\pi], k\in Z$