TESKARI TRIGONOMETRIYA FORMULALAR

#	FORMULA
1	$D(arcsin) = D(arccos) = [-1; 1]$
2	$E(arcsin) = \left[-\dfrac{\pi}{2}; \dfrac{\pi}{2}\right]$
3	$E(arccos) = [0; \pi]$
4	$D(arctg) = D(arcctg) = R$
5	$E(arctg) = \left(-\dfrac{\pi}{2}; \dfrac{\pi}{2}\right)$
6	$E(arcctg) = (0; \pi)$
7	$\arcsin(-x) = -arcsinx$
8	$\arccos(-x) = \pi - arccosx$
9	$\arctg(-x) = -arctgx$
10	$\arcctg(-x) = \pi - arcctgx$
11	$\arcsin(sinx) = x, \quad -\dfrac{\pi}{2} \le x \le \dfrac{\pi}{2}$
12	$\sin(arcsinx) = x, \quad -1 \le x \le 1$
13	$\arccos(cosx) = x, \quad 0 \le x \le \pi$
14	$\cos(arccosx) = x, \quad -1 \le x \le 1$
15	$arctg(tgx) = x, \quad -\dfrac{\pi}{2} < x < \dfrac{\pi}{2}$
16	$tg(arctgx) = x, \quad x \in R$
17	$arcctg(ctgx) = x, \quad 0 < x < \pi$
18	$ctg(arcctgx) = x, \quad x \in R$
19	$arcsinx + arccosx = \dfrac{\pi}{2}$
20	$arcsinx + \arcsin(-x) = 0$
21	$arccosx + \arccos(-x) = \pi$
22	$arctgx + arcctgx = \dfrac{\pi}{2}$
23	$arctgx + arctg(-x) = 0$
24	$arcctgx + arcctg(-x) = \pi$
25	$\sin(arccosx) = \cos(arcsinx) = \sqrt{1-x^2}$
26	$tg(arcctgx) = ctg(arctgx) = \dfrac{1}{x}$
27	$arcsin\,x + arcsiny = arcsin(x\sqrt{1-y^2} + y\sqrt{1-x^2})$
28	$arcsin\,x - arcsiny = arcsin(x\sqrt{1-y^2} - y\sqrt{1-x^2})$
29	$arccos\,x + arccosy = arccos(x\sqrt{1-y^2} - y\sqrt{1-x^2})$
30	$arccos\,x - arccosy = arccos(x\sqrt{1-y^2} + y\sqrt{1-x^2})$
31	$arctgx + arctgy = \dfrac{x+y}{1-xy}$
32	$arctgx - arctgy = \dfrac{x-y}{1+xy}$
33	$arctgx + arctgy + arctgz = arctg\dfrac{x+y+z-xyz}{1-xy-xz-yz}$
34	$\sin(arctgx) = \dfrac{x}{\sqrt{1+x^2}}$
35	$\sin(arcctgx) = \dfrac{1}{\sqrt{1+x^2}}$
36	$\sin(2arcsinx) = 2x\sqrt{1-x^2}$
37	$\sin(2arccosx) = 2x\sqrt{1-x^2}$
38	$\sin(2arctgx) = \dfrac{2x}{1+x^2}$
39	$\sin(2arcctgx) = \dfrac{2x}{1+x^2}$
40	$\sin\left(\dfrac{1}{2}arcsinx\right) = \sqrt{\dfrac{1-\sqrt{1-x^2}}{2}}$
41	$\sin\left(\dfrac{1}{2}arccosx\right) = \sqrt{\dfrac{1-x}{2}}$
42	$\sin\left(\dfrac{1}{2}arctgx\right) = \sqrt{\dfrac{1-\frac{1}{\sqrt{1+x^2}}}{2}}$
43	$\sin\left(\dfrac{1}{2}arcctgx\right) = \sqrt{\dfrac{1-\frac{x}{\sqrt{1+x^2}}}{2}}$
44	$\sin(3arcsinx) = 3x - 4x^3$
45	$\sin(4arcsinx) = 4x\sqrt{1-x^2}(1-2x^2)$
46	$\sin(5arcsinx) = 5x - 20x^3 + 16x^5$

TRIGONOMETRIYA

47	$\cos(arctgx) = \dfrac{1}{\sqrt{1+x^2}}$	70	$tg(3arctgx) = \dfrac{3x - x^3}{1 - 3x^2}$
48	$\cos(arcctgx) = \dfrac{x}{\sqrt{1+x^2}}$	71	$tg(4arctgx) = \dfrac{4x - 4x^3}{1 - 6x^2 + x^4}$
49	$\cos(2arcsinx) = 1 - 2x^2$	72	$tg(5arctgx) = \dfrac{x^5 - 10x^3 + 5x}{5x^4 - 10x^2 + 1}$
50	$\cos(2arccosx) = 2x^2 - 1$	73	$ctg(arcsinx) = \dfrac{\sqrt{1-x^2}}{x}$
51	$\cos(2arctgx) = \dfrac{1 - x^2}{1 + x^2}$	74	$ctg(arccosx) = \dfrac{x}{\sqrt{1-x^2}}$
52	$\cos(2arcctgx) = \dfrac{x^2 - 1}{1 + x^2}$	75	$ctg(2arcsinx) = \dfrac{1 - 2x^2}{2x\sqrt{1-x^2}}$
53	$\cos\left(\dfrac{1}{2}arcsinx\right) = \sqrt{\dfrac{1 + \sqrt{1-x^2}}{2}}$	76	$ctg(2arccosx) = \dfrac{2x^2 - 1}{2x\sqrt{1-x^2}}$
54	$\cos\left(\dfrac{1}{2}arccosx\right) = \sqrt{\dfrac{1 + x}{2}}$	77	$ctg(2arctgx) = \dfrac{1 - x^2}{2x}$
55	$\cos\left(\dfrac{1}{2}arctgx\right) = \sqrt{\dfrac{1 + \frac{1}{\sqrt{1+x^2}}}{2}}$	78	$ctg(2arcctgx) = \dfrac{x^2 - 1}{2x}$
56	$\cos\left(\dfrac{1}{2}arcctgx\right) = \sqrt{\dfrac{1 + \frac{x}{\sqrt{1+x^2}}}{2}}$	79	$ctg\left(\dfrac{1}{2}arcsinx\right) = \dfrac{1 + \sqrt{1-x^2}}{x}$
57	$\cos(3arccosx) = 4x^3 - 3x$	80	$ctg\left(\dfrac{1}{2}arccosx\right) = \dfrac{1 + x}{\sqrt{1-x^2}}$
58	$\cos(4arccosx) = 8x^4 - 8x^2 + 1$	81	$ctg\left(\dfrac{1}{2}arctgx\right) = \dfrac{1 + \sqrt{1+x^2}}{x}$
59	$\cos(5arccosx) = 16x^5 - 20x^3 + 5x$	82	$ctg\left(\dfrac{1}{2}arcctgx\right) = x + \sqrt{1+x^2}$
60	$tg(arcsinx) = \dfrac{x}{\sqrt{1-x^2}}$		
61	$tg(arccosx) = \dfrac{\sqrt{1-x^2}}{x}$		
62	$tg(2arcsinx) = \dfrac{2x\sqrt{1-x^2}}{1 - 2x^2}$		
63	$tg(2arccosx) = \dfrac{2x\sqrt{1-x^2}}{2x^2 - 1}$		
64	$tg(2arctgx) = \dfrac{2x}{1 - x^2}$		
65	$tg(2arcctgx) = \dfrac{2x}{x^2 - 1}$		
66	$tg\left(\dfrac{1}{2}arcsinx\right) = \dfrac{x}{1 + \sqrt{1-x^2}}$		
67	$tg\left(\dfrac{1}{2}arccosx\right) = \dfrac{\sqrt{1-x^2}}{1 + x}$		
68	$tg\left(\dfrac{1}{2}arctgx\right) = \dfrac{x}{1 + \sqrt{1+x^2}}$		
69	$tg\left(\dfrac{1}{2}arcctgx\right) = \dfrac{1}{x + \sqrt{1+x^2}}$		

$$y = arcsinx$$

$$\begin{cases} x - 2\pi n, agar \ \dfrac{\pi}{2}(4n - 1) \leq x \leq \dfrac{\pi}{2}(4n + 1) \\ (2n + 1)\pi, agar \ \dfrac{\pi}{2}(4n + 1) \leq x \leq \dfrac{\pi}{2}(4n + 3) \end{cases}$$

$$y = arccosx$$

$$\begin{cases} x - 2\pi n, agar \ 2\pi n \leq x \leq 2\pi(2n + 1) \\ 2\pi n - x, agar \ \pi(2n - 1) \leq x \leq 2\pi n \end{cases}$$