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16 - Mavzu: Teskari trigonometrik funksiyalarning o`zaro munosabatlari

Teskari trigonometrik funksiyalarning o`zaro munosabatlari

TIIAME

1. $sin(arccosx) = \sqrt{1 - x^2};\qquad x \in [-1; 1]$

2. $sin(arctgx) = \frac{x}{\sqrt{1+x^2}};\qquad x \in R$

3. $sin(arcctgx) = \frac{x}{\sqrt{1+x^2}};\qquad x \in R$

4. $cos(arcsinx) = \sqrt{1 - x^2};\qquad x \in [-1; 1]$

5. $cos(arctgx) = \frac{x}{\sqrt{1+x^2}};\qquad x \in R$

6. $cos(arcctgx) = \frac{x}{\sqrt{1+x^2}};\qquad x \in R$

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7. $tg(arcsinx) = \frac{x}{\sqrt{1-x^2}}; \qquad x \in (-1; 1)$

8. $tg(arcosx) = \frac{\sqrt{1-x^2}}{x}; \qquad x \in [-1; 0) \cup (0; 1]$

9. $tg(arcctgx) = \frac{1}{x}; \qquad x \in R, x \neq 0$

10. $ctg(arcsinx) = \frac{\sqrt{1-x^2}}{x}; \qquad x \in [-1; 0) \cup (0; 1]$

11. $ctg(arccosx) = \frac{x}{\sqrt{1-x^2}}; \qquad x \in (-1; 1)$

12. $ctg(arctgx) = \frac{1}{x}; \qquad x \in R, \ x \neq 0$

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TIIAME

13. $arcsinx = arccos\sqrt{1-x^2} = \frac{\pi}{2} - arccosx;$ $\quad x \in [-1;1]$

14. $arcsinx = arctg\frac{x}{\sqrt{1-x^2}};$ $\quad x \in (-1;1)$

15. $arxsinx + arccosx = \frac{\pi}{2};$ $\quad x \in [1;1]$

16. $arccosx = \frac{\pi}{2} - arcsinx = arcsin\sqrt{1-x^2} = arctg\frac{\sqrt{1-x^2}}{x};$

17. $arcsinx + arcsiny = arccos(\sqrt{1-x^2} \cdot \sqrt{1-y^2} - xy);$

18. $arccosx + arccosy = arccos(xy - \sqrt{(1-x^2)(1-y^2)});$

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19. $arcsinx - arcsiny = arcsin(x\sqrt{1-y^2} - y\sqrt{1-x^2})$

20. $arctgx - arctgy = arctg\frac{x-y}{1+xy};\ \ x > 0, y > 0$

21. $arcctgx - arcctgy = arcctg\frac{1+xy}{y-x};\ \ x > 0, y > 0, y \neq x$

22. $arcctgx + arcctgy = arcctg\frac{x+y}{xy-1};$

Eng soda teskari trigonometrik tengsizliklarni yechish

Tensizlikturi		Tengsizlikningyechimlarito`plami
$arcsinx > a$	$(\|a\| < \pi/2)$	$x \in (sina; 1)$
$arcsinx < a$	$(\|a\| \leq \pi/2)$	$x \in (-1; sina)$
$arccosx > a$	$(0 < a < \pi)$	$x \in (-1; cosa)$
$arccosx < a$	$(0 < a \leq \pi)$	$x \in (cosa; 1)$
$arctgx > a$	$(\|a\| < \pi/2)$	$x \in (tga;\ +\infty)$
$arctgx < a$	$(\|a\| < \pi/2)$	$x \in (-\infty; tga)$
$arcctgx > a$	$(0 < a < \pi)$	$x \in (-\infty; ctga)$
$arcctgx < a$	$(0 < a < \pi)$	$x \in (ctga;\ +\infty)$