

Занятие №2

$\sin(x + 360^\circ \cdot n) = \sin x$	$\cos(x + 360^\circ \cdot n) = \cos x$	$\sin(-x) = -\sin x$	$\operatorname{tg}(-x) = -\operatorname{tg} x$
$\sin(x + 2\pi n) = \sin x$	$\cos(x + 2\pi n) = \cos x$	$\cos(-x) = \cos x$	$\operatorname{ctg}(-x) = -\operatorname{ctg} x$
$\operatorname{tg}(x + 360^\circ \cdot n) = \operatorname{tg} x$	$\sin(180 - x) = \sin x$	$\sin(180 + x) = -\sin x$	
$\operatorname{tg}(x + 2\pi n) = \operatorname{tg} x$	$\sin(\pi - x) = -\sin x$	$\sin(\pi + x) = -\sin x$	
$\operatorname{ctg}(x + 360^\circ \cdot n) = \operatorname{ctg} x$	$\cos(180 - x) = -\cos x$	$\cos(180 + x) = -\cos x$	
$\operatorname{ctg}(x + 2\pi n) = \operatorname{ctg} x$	$\cos(\pi - x) = -\cos x$	$\cos(\pi + x) = -\cos x$	

1 Вычислить:

- $\sin 270^\circ; \sin 180^\circ; \cos 360^\circ; \sin(-90^\circ); \operatorname{tg} 270^\circ; \operatorname{ctg}(-90^\circ); \sin 720^\circ$
- $\sin 120^\circ; \cos 150^\circ; \sin 220^\circ; \sin(-135^\circ); \cos 225^\circ; \operatorname{tg}(-120^\circ); \sin(-690^\circ); \cos 405^\circ; \operatorname{ctg}(-1020^\circ)$

2 Вычислить:

- $\sin \frac{\pi}{3}; \cos \frac{\pi}{4}; \operatorname{ctg} \frac{\pi}{2}; \operatorname{tg} \frac{\pi}{6}$
- $\sin \frac{7\pi}{6}; \sin\left(-\frac{5\pi}{4}\right); \cos \frac{13\pi}{4}; \sin \frac{29\pi}{3}; \sin\left(-\frac{11\pi}{4}\right); \cos \frac{55\pi}{6}; \operatorname{tg} \frac{20\pi}{3}; \operatorname{tg}\left(-\frac{5\pi}{4}\right)$

3 Вычислить:

- $2 \sin 30^\circ - \sqrt{3} \sin 60^\circ \cdot 45$
- $4 \cos 45^\circ \cdot \operatorname{ctg} 60^\circ \cdot \operatorname{tg} 60^\circ - 3 \sin 45^\circ$
- $(0,75 \cdot \operatorname{tg}^2 30^\circ - \sin^2 60^\circ + \operatorname{tg}^2 45^\circ + \cos 60^\circ)^{-1}$
- $\sqrt{(\operatorname{tg} 60^\circ - 2)^2} - \sqrt{(\operatorname{ctg} 30^\circ - 2)^2}$

4 Вычислить:

- $\operatorname{ctg} \frac{\pi}{6} \cdot \cos \frac{\pi}{3} \cdot \sin \frac{\pi}{4}$
- $\left(\sin \frac{\pi}{3} \cdot \cos\left(-\frac{\pi}{4}\right) \cdot \operatorname{tg}\left(-\frac{\pi}{6}\right)\right)^{-1}$
- $\frac{\left(\cos\left(-\frac{3\pi}{2}\right) - \sin \frac{3\pi}{2}\right)^2}{2 \sin \frac{\pi}{6} \cdot \operatorname{tg} \frac{\pi}{4} + \cos(-\pi) - \sin \frac{\pi}{4}}$

5 Доказать тождество:

- $\cos^2 x + \sin^2 x \cdot \sin^2 y + \sin^2 x \cdot \cos^2 y = 1$
- $\frac{\sin^2 x}{\sin x - \cos x} - \frac{\sin x + \cos x}{\operatorname{tg}^2 x - 1} = \sin x + \cos x$
- $(1 + \operatorname{ctg}^2 \alpha)(1 - \sin^2 \alpha) = \operatorname{ctg}^2 \alpha$

6 Вычислить значение:

- $\operatorname{tg} \alpha$, если $\cos \alpha = -0,6$ и $90^\circ < \alpha < 180^\circ$
- $\sin x, \cos x$, если $\operatorname{ctg} x = -\frac{8}{15}$ и $x \in (90^\circ; 180^\circ)$