# 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:

1) $\sin 90^\circ$; $\sin 270^\circ$; $\sin 180^\circ$; $\cos 0^\circ$; $\cos 360^\circ$; $\sin(-90^\circ)$; $\operatorname{tg}270^\circ$; $\operatorname{ctg}(-90^\circ)$; $\sin 720^\circ$
2) $\sin 120^\circ$; $\cos 150^\circ$; $\sin 220^\circ$; $\sin(-135^\circ)$; $\cos 225^\circ$; $\operatorname{tg}(-120^\circ)$; $\sin(-690^\circ)$; $\cos 405^\circ$; $\operatorname{ctg}(-1020^\circ)$

**2** Вычислить:

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

**3** Вычислить:

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

**4** Вычислить:

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

**5** Доказать тождество:

1) $\cos^2 x+\sin^2 x\cdot\sin^2 y+\sin^2 x\cdot\cos^2 y=1$
2) $\dfrac{\sin^2 x}{\sin x-\cos x}-\dfrac{\sin x+\cos x}{\operatorname{tg}^2 x-1}=\sin x+\cos x$
3) $(1+\operatorname{ctg}^2\alpha)(1-\sin^2\alpha)=\operatorname{ctg}^2\alpha$

**6** Вычислить значение:

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