（1）公式二：$\sin(\pi+\alpha)=\underline{-\sin\alpha}$，$\cos(\pi+\alpha)=\underline{-\cos\alpha}$，$\tan(\pi+\alpha)=\underline{\tan\alpha}$.

（2）公式三：$\sin(-\alpha)=\underline{-\sin\alpha}$，$\cos(-\alpha)=\underline{\cos\alpha}$，$\tan(-\alpha)=\underline{-\tan\alpha}$.

（3）公式四：$\sin(\pi-\alpha)=\underline{\sin\alpha}$，$\cos(\pi-\alpha)=\underline{-\cos\alpha}$，$\tan(\pi-\alpha)=\underline{-\tan\alpha}$.

（4）公式五：$\sin(\frac{\pi}{2}-\alpha)=\underline{\cos\alpha}$，$\cos(\frac{\pi}{2}-\alpha)=\underline{\sin\alpha}$.

（5）公式六：$\sin(\frac{\pi}{2}+\alpha)=\underline{\cos\alpha}$，$\cos(\frac{\pi}{2}+\alpha)=\underline{-\sin\alpha}$.

2．诱导公式统一口诀：奇变偶不变，符号看象限（α 假设一锐角）.

$\frac{1}{2}\pi$的几倍

$\Downarrow$

sin变cos

cos变sin

看括号内的角度

（1）$\sin 960^\circ$；（2）$\cos\frac{23\pi}{6}$；（3）$\sin(-\frac{7\pi}{3})$.

(1) $\sin 960^\circ=\sin(960^\circ-720^\circ)=\sin 240^\circ=\sin(\pi+60^\circ)=-\sin 60^\circ=-\frac{\sqrt{3}}{2}$

(2) $\cos\frac{23}{6}\pi=\cos(\frac{23}{6}\pi-4\pi)=\cos(-\frac{1}{6}\pi)=\cos\frac{1}{6}\pi=\cos 30^\circ=\frac{\sqrt{3}}{2}$

(3) $\sin(-\frac{7}{3}\pi)=\sin(-\frac{7}{3}\pi+2\pi)=\sin(-\frac{1}{3}\pi)=-\sin\frac{1}{3}\pi=-\sin 60^\circ=-\frac{\sqrt{3}}{2}$

(1) $\dfrac{\sqrt{1+\cos 100^\circ \sin 170^\circ}}{\cos 370^\circ + \sqrt{1-\sin^2 170^\circ}}$;

(2) $\cos\dfrac{\pi}{7}+\cos\dfrac{2\pi}{7}+\cos\dfrac{3\pi}{7}+\cos\dfrac{4\pi}{7}+\cos\dfrac{5\pi}{7}+\cos\dfrac{6\pi}{7}$; $=0$

(3) $\cos^2 1^\circ + \cos^2 3^\circ + \cos^2 5^\circ + \cdots + \cos^2 89^\circ$.

(1) $\dfrac{\sqrt{1+\cos 100^\circ \sin 170^\circ}}{\cos 370^\circ + \sqrt{1-\sin^2 170^\circ}} = \dfrac{\cos 10^\circ}{\cos 10^\circ + \cos 10^\circ} = \dfrac{1}{2}$

$\sqrt{1+\cos 100^\circ \sin 170^\circ} = \sqrt{1+\cos(\frac{\pi}{2}+10^\circ)\sin(180^\circ-10^\circ)} = \sqrt{1+\sin 10^\circ\cdot(-\sin 10^\circ)} = \sqrt{1-\sin^2 10^\circ} = \sqrt{\cos^2 10^\circ}$ $(\sin^2 10^\circ + \cos^2 10^\circ = 1)$ $= \cos 10^\circ$

$\sqrt{1-\sin^2 170^\circ} = \sqrt{\cos^2 170^\circ} = \cos 170^\circ = \cos(180^\circ - 10^\circ) = \cos 10^\circ$

$\cos 370^\circ = \cos(360^\circ + 10^\circ) = \cos 10^\circ$

(2) $\cos\frac{6}{7}\pi = \cos(\pi - \frac{1}{7}\pi) = -\cos\frac{1}{7}\pi$

$\cos\frac{5}{7}\pi = -\cos\frac{2}{7}\pi$

$\cos\frac{4}{7}\pi = -\cos\frac{3}{7}\pi$

(3) $\cos^2 89^\circ = \cos^2(\frac{\pi}{2} - 1^\circ) = \sin^2 1^\circ + \cos^2 1^\circ = 1$

$\therefore \cos^2 1^\circ + \cos^2 3^\circ + \cdots + \cos^2 89^\circ = 22 + \cos^2 45^\circ = 22 + (\frac{\sqrt{2}}{2})^2 = 22\frac{1}{2}$

配凑：$\cos(\frac{\pi}{2}-\beta)=\sin\beta$

【例 4】已知$\sin(\frac{\pi}{3}-\alpha)=\frac{1}{3}$，则$\cos(\frac{\pi}{6}+\alpha)=$______.

$$\left(\frac{\pi}{3}-a\right)+\left(\frac{\pi}{6}+a\right)=\frac{\pi}{2}$$

$$\cos\left(\frac{\pi}{6}+a\right)=\cos\left[\frac{\pi}{2}-\left(\frac{\pi}{3}-a\right)\right]=\sin\left(\frac{\pi}{3}-a\right)=\frac{1}{3}$$

【例 5】已知$\tan(\frac{\pi}{6}+\alpha)=2$，则$\tan(\frac{5\pi}{6}-\alpha)=$______. $\tan(\pi-a)=-\tan a$

$$\frac{\pi}{6}+a+\frac{5}{6}\pi-a=\pi$$

$$\tan\left(\frac{5}{6}\pi-a\right)=\tan\left[\pi-\left(\frac{1}{6}\pi+a\right)\right]=-\tan\left(\frac{1}{6}\pi+a\right)=-2$$

【例 6】已知$\cos(\underbrace{\overset{a}{75^\circ+\alpha}}_{\text{锐角}})=\frac{1}{3}$，且$\alpha$为第三象限的角，则$\sin(\overset{b}{\alpha-105^\circ})=$____.

$$\underset{a}{75^\circ+\alpha}\ \underset{-}{-}\ \underset{b}{(\alpha-105^\circ)}=180^\circ=\pi$$

$$\sin(\alpha-105^\circ)=\sin[(75^\circ+\alpha)-180^\circ]=-\sin(75^\circ+\alpha)$$

$\because \cos(75^\circ+\alpha)=\frac{1}{3}$ α为第三象限角 $\alpha+75^\circ$为第三或第四象限角

$$\therefore \sin(75^\circ+\alpha)=-\sqrt{1-\cos^2(75^\circ+\alpha)}=-\frac{2\sqrt{2}}{3}$$

$$\sin(a-105^\circ)=\frac{2}{3}\sqrt{2}$$