2 Solution 2(The Normal One) :-

In $n\alpha$ rotation the number of times full circle rotation occures $= \left\lfloor \frac{n\alpha}{2\pi} \right\rfloor$

In one full circle rotation sign change occures 2 times. Hence in $\left\lfloor \frac{n\alpha}{2\pi} \right\rfloor$ full rotation sign change occures $= 2 \left\lfloor \frac{n\alpha}{2\pi} \right\rfloor$

Now the rest angle is

$$n\alpha - \left\lfloor \frac{n\alpha}{2\pi} \right\rfloor \times 2\pi$$

If we consider 0 as a change of sign in case of $\cos\left(\frac{\pi}{2}\right)$ and $\cos\left(\frac{3\pi}{2}\right)$ then:-