

Using the Half Angle Identity

Name: _____

Section: _____

E.g. Use the half angle identity to compute the following value.

$$\cos\left(\frac{u}{2}\right) = \pm \sqrt{\frac{1 + \cos(u)}{2}}$$

$$\frac{u}{2} = \frac{-7\pi}{12} \Rightarrow u = 2 \cdot \frac{-7\pi}{12} = \frac{-7\pi}{6}$$

So

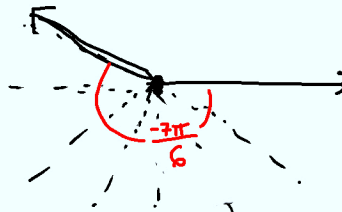
$$\cos\left(\frac{-7\pi}{12}\right) = \pm \sqrt{\frac{1 + \cos\left(\frac{-7\pi}{6}\right)}{2}}$$

$\cos\left(\frac{-7\pi}{6}\right)$


① reference $\angle = \frac{\pi}{6}$

② $\cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$

③ x-coord is neg
 $\Rightarrow \cos\left(\frac{-7\pi}{6}\right) = -\frac{\sqrt{3}}{2}$



$$\cos\left(\frac{-7\pi}{12}\right) = \pm \sqrt{\frac{1 + \left(-\frac{\sqrt{3}}{2}\right)}{2}}$$



x-coord is neg
 neg
 $\Rightarrow \cos\left(\frac{-7\pi}{12}\right)$ is neg

$$\cos\left(\frac{-7\pi}{12}\right) = -\sqrt{\frac{1 - \frac{\sqrt{3}}{2}}{2}}$$