

Warmup 6: Solve over interval
[0, 2π)

$$\cos x = \cos \frac{x}{2}$$

$$(\cos x)^2 = \left(\frac{1 + \sqrt{\frac{1 + \cos x}{2}}}{2} \right)^2$$

$$2(\cos^2 x) = 1 + \cos x$$

$$2\cos^2 x - \cos x - 1 = 0$$

$$(2\cos x + 1)(\cos x - 1) = 0$$

$$\cos x = -\frac{1}{2} \quad \cos x = 1$$

$$\cos x = -\frac{1}{2} \quad \cos x = 1$$

$$x = \frac{2\pi}{3}, \frac{4\pi}{3}, 0\pi$$