

$$17.) \frac{1 + \cos x}{1 - \cos x} = 0$$

$$1 + \cos x = 0$$

$$\cos x = -1$$

$$x = \cos^{-1}(-1)$$

$$x = \pi$$

$$18.) 8 - 12(1 - \cos^2 \theta) = 4 \cos^2 \theta$$

$$8 - 12 + 12 \cos^2 \theta = 4 \cos^2 \theta$$

$$8 \cos^2 \theta = 4$$

$$\cos^2 \theta = \frac{1}{2}$$

$$\cos \theta = \pm \sqrt{\frac{1}{2}} = \pm \frac{1}{\sqrt{2}} = \pm \frac{\sqrt{2}}{2}$$

$$\cos \theta = \frac{\sqrt{2}}{2} \quad \cos \theta = -\frac{\sqrt{2}}{2}$$

$$\theta = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

$$19.) 4(1 - \cos^2 \theta) = 1 + 4 \cos \theta$$

$$4 - 4 \cos^2 \theta = 1 + 4 \cos \theta$$

$$0 = 4 \cos^2 \theta + 4 \cos \theta - 3$$

$$0 = (2 \cos \theta + 3)(2 \cos \theta - 1)$$

$$2 \cos \theta + 3 = 0 \quad 2 \cos \theta - 1 = 0$$

$$\cos \theta = -\frac{3}{2} \quad \cos \theta = \frac{1}{2}$$

$$\theta = \frac{\pi}{3}, \frac{5\pi}{3}$$

20) omit

$$21.) 4 \sin^3 \theta + 2 \sin^2 \theta - 2 \sin \theta - 1 = 0$$

$$2 \sin^2 \theta (2 \sin \theta + 1) - 1 (2 \sin \theta + 1) = 0$$

$$(2 \sin \theta + 1)(2 \sin^2 \theta - 1) = 0$$

$$2 \sin \theta + 1 = 0$$

$$\sin \theta = -\frac{1}{2}$$

$$2 \sin^2 \theta = 1$$

$$\sin^2 \theta = \frac{1}{2}$$

$$\sin \theta = \pm \sqrt{\frac{1}{2}} = \pm \frac{\sqrt{2}}{2}$$

factor by grouping

$$\sin \theta = \frac{\sqrt{2}}{2}$$

$$\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$