

P. 501 ex. 1

#8 solve: $2\cos^2\theta + \cos\theta - 1 = 0$

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

$2\cos\theta - 1 = 0$ and $\cos\theta + 1 = 0$

$2\cos\theta = 1$

$\cos\theta = -1$

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

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

$\theta = \cos^{-1}\left(\frac{1}{2}\right)$

$\theta = \pi$

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

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

#20 solve: $\sin(2\theta) = \cos\theta$

I.D.

$2\sin\theta\cos\theta = \cos\theta$

$2\sin\theta\cos\theta - \cos\theta = 0$

$\cos\theta(2\sin\theta - 1) = 0$

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

and $\cos\theta = 0$

$\theta = \sin^{-1}\left(\frac{1}{2}\right)$

$\theta = \cos^{-1}(0)$

$\theta = \frac{\pi}{2}, \frac{3\pi}{2}$

$\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{\pi}{2}, \frac{3\pi}{2}$

$$\# 33) \quad 3(1 - \cos \theta) = \sin^2 \theta$$

$$3(1 - \cos \theta) = 1 - \cos^2 \theta$$

$$3 - 3\cos \theta = 1 - \cos^2 \theta$$

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

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

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

$$\cos \theta - 1 = 0$$

$$\cos \theta = 1$$

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

$$\theta = 0, 2\pi$$

and

$$\cos \theta - 2 = 0$$

$$\cos \theta = 2$$

never

$$\text{so } \theta = \boxed{0, 2\pi}$$

$$39) \quad \sec^2 \theta + \tan \theta = 0$$

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$$\tan^2 \theta + 1 + \tan \theta = 0$$

$$\tan^2 \theta + \tan \theta + 1 = 0$$

$$(\tan \theta \quad ?)(\tan \theta \quad ?) = 0$$

$$\text{let } \tan \theta = x$$

$$x^2 + x + 1 = 0$$

$$x = \frac{-1 \pm \sqrt{1 - 4(1)}}{2(1)}$$

$$x = \text{No Solution}$$

$$b1) f(x) = \sin(2x) - \sin x$$

zeros means $f(x) = 0$

$$\sin(2x) - \sin x = 0$$

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$$2\sin x \cos x - \sin x = 0$$

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

$$\sin x = 0 \quad \text{and} \quad 2\cos x - 1 = 0$$

$$x = \sin^{-1}(0)$$

$$x = 0, \pi$$

$$2\cos x = 1$$

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

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

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

$$x = 0, \frac{\pi}{3}, \pi, \frac{5\pi}{3}$$

Solve
for
"x"