

WARMUP - Factor

1) $x^2 - 4$
 $(x+2)(x-2)$

2) $4x^2 - 1$
 $(2x+1)(2x-1)$

3) $6x^2 - 3x$
 $3x(2x-1)$

4) $x^2 - 3x - 4$
 $(x-4)(x+1)$

5) $2x^2 - 3x - 2$
 $(2x+1)(x-2)$

$\begin{array}{r|l} 2x & 1 \\ \times & 2x^2 & 1x \\ \hline -2 & -4x & -2 \end{array}$ ~~$\begin{array}{r} -4x^2 \\ -4x \\ -3x \\ 1 \end{array}$~~

6) $3x^2 + 4x + 1$
 $2x^2 - 3x - 2$
 $2x^2 - 4x + x - 2$
 $2x(x-2) + 1(x-2)$
 $(2x+1)(x-2)$

6) $3x^2 + 4x + 1$
 $3x^2 + 3x + x + 1$
 $3(x+1) + 1(x+1)$
 $(3x+1)(x+1)$

$3x^2$	x
$3x$	1

~~$\begin{array}{r} 3 \\ 1 \end{array} \times \begin{array}{r} 3 \\ 4 \end{array}$~~

Section 6.8 Solving Trig Equations Part 2

ex: Solve on $0 \leq \theta < 2\pi$

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

$$(2\underline{\cos\theta} - 1)(\underline{\cos\theta} + 1) = 0$$

Factor $2 \cdot (-1) = -2$
 $2 + (-1) = 1$

$2x^2 + 1x - 1$

$2x^2 + 2x - x - 1$
 $2x(x+1) - 1(x+1)$

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

$$(2x-1)(x+1)$$

$$2\cos\theta = 1 \quad \cos\theta = -1$$

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

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

ex: Solve for $0 \leq \theta < 2\pi$

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

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

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

$$2\sin^2\theta - \sin\theta - 1 = 0$$

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

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

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

$$\theta = \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{\pi}{2}$$

← get equation to have same trig function.

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

$$\begin{array}{r} -2x^2 \\ -2x \quad x \\ -x \end{array}$$

	x	-1
$2x$	$2x^2$	$-2x$
1	x	-1

ex: Solve for $0 \leq \theta < 2\pi$

$$\sin(2\theta) - \sqrt{3} \sin \theta = 0$$

$$2 \sin \theta \cos \theta - \sqrt{3} \sin \theta = 0$$

$$\sin \theta (2 \cos \theta - \sqrt{3}) = 0$$

$$\sin \theta = 0 \quad 2 \cos \theta - \sqrt{3} = 0$$

$$\cos \theta = \frac{\sqrt{3}}{2}$$

$$\theta = 0, \pi, \frac{\pi}{6}, \frac{11\pi}{6}$$

Assignment

Solve on $0 \leq \theta < 2\pi$

1) $2 \cos^2 \theta + \cos \theta = 0$

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

3) $\sin^2 \theta - \cos^2 \theta = 1 + \cos \theta$

4) $(\tan \theta - 1)(\sec \theta - 1) = 0$

5) $\sin^2 \theta = 6(\cos \theta + 1)$

1) $\cos \theta (2 \cos \theta + 1) = 0$
 $\cos \theta = 0 \quad \cos \theta = -\frac{1}{2}$

$$\theta = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{2\pi}{3}, \frac{4\pi}{3}$$

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

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

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

4) $\tan \theta - 1 = 0 \quad \sec \theta - 1 = 0$

$$\tan \theta = 1 \quad \sec \theta = 1$$

$$\theta = \frac{\pi}{4}, \frac{5\pi}{4}, 0$$

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

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

$$\cos\theta = 0 \quad \cos\theta = -\frac{1}{2}$$

$$\theta = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{2\pi}{3}, \frac{4\pi}{3}$$

$$5) \quad 1 - \cos^2\theta = 6\cos\theta + 6$$

$$0 = \cos^2\theta + 6\cos\theta + 5$$

$$0 = (\cos\theta + 1)(\cos\theta + 5)$$

$$\cos\theta = -1$$

~~$$\cos\theta = 5$$~~

$$\theta = \pi$$