

Tuesday, February 28

✧ 5.2 - SOLVING TRIG EQUATIONS

5.1-5.2 QUIZ THURSDAY!

How I see math word problems: If you have 4 pencils and I have 7 apples, how many pancakes will fit on the roof? Purple, because aliens don't wear hats.



your eCards
someecards.com

$$\textcircled{34} \frac{1+\cos\theta}{1+\cos\theta} \frac{1-\cos\theta}{\sin\theta} = \frac{\sin\theta}{1+\cos\theta}$$

$$\frac{1-\cos^2\theta}{(1+\cos\theta)\sin\theta} =$$

$$\frac{\sin^2\theta}{(1+\cos\theta)\sin\theta} =$$

$$\frac{\sin\theta}{1+\cos\theta} = \frac{\sin\theta}{1+\cos\theta} \quad \checkmark$$

5.1 Solving Trig Equations —
using Simplifying & Identities

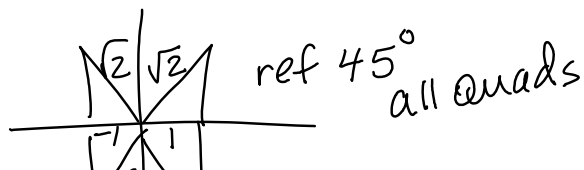
Solve over $[0, 2\pi)$ in radians.

$$\textcircled{1} 2\cos^2 x = 1$$

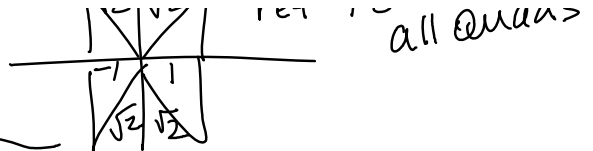
$$\sqrt{\cos^2 x} = \sqrt{\frac{1}{2}}$$

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

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



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

You try!

(2) $\tan^2 x = 3$

$$\tan x = \pm \sqrt{3}$$



ref 60°
all Quads

$$x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$$

(3) $2 \cos x \sin x - \cos x = 0$

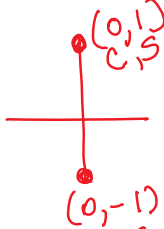
GCF $\cos x (2 \sin x - 1) = 0$

$$\cos x = 0$$

$$2 \sin x - 1 = 0$$

$$2 \sin x = 1$$

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

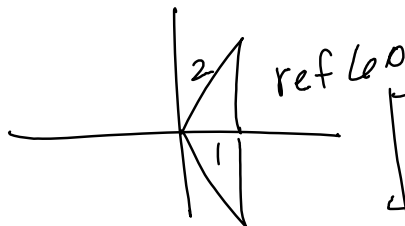


$$x = \frac{\pi}{2}, \frac{3\pi}{2} \quad x = \frac{\pi}{6}, \frac{5\pi}{6}$$

(4) $4 \cos^2 x - 4 \cos x + 1 = 0$

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

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



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

Factor:
Can make

$$\cos x = a$$

$$4a^2 - 4a + 1 = 0$$

$$(2a - 1)(2a - 1) = 0$$

$$a = \frac{1}{2} \quad a = \frac{1}{2}$$

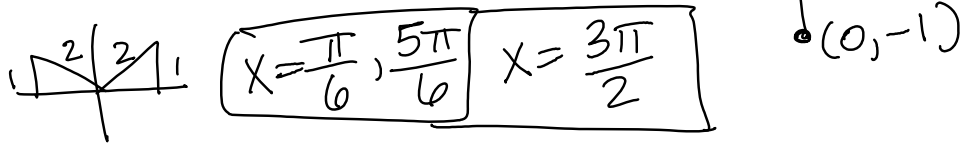
$$\cos x = \frac{1}{2}$$

You try!

(5) $2 \sin^2 x + \sin x - 1 = 0$

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

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



$$\textcircled{b} \quad 3\cos t - 2\sin^2 t = 0 \quad \rightarrow \text{use Pythag. Id.}$$

$$3\cos t - 2(1 - \cos^2 t) = 0$$

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

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

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

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

No Solution

