

November 1

What are your goals for
this month?



November 1

Students will verbally explain how to
solve trig equations

(using the words:
inverse, angle ...)



for $0 \leq x \leq 2\pi$

Solve:

$$3\tan^2(x) - 1 = 0$$

$$3\tan^2(x) - 1 = 0$$

$$3(\tan(x))^2 - 1 = 0$$

$$\begin{array}{r} +1 \quad +1 \\ \hline 3(\tan(x))^2 = 1 \end{array}$$

$$\frac{3(\tan(x))^2}{3} = \frac{1}{3}$$

$$\sqrt{(\tan(x))^2} = \sqrt{\frac{1}{3}}$$

$$\tan(x) = \frac{1}{\sqrt{3}}$$

$$\tan(x) = -\frac{1}{\sqrt{3}}$$

$$\tan^{-1}(\tan(x)) = \tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$$

$$\tan^{-1}(\tan(x)) = \tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$$

$$x = \tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$$

$$x = \tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$$

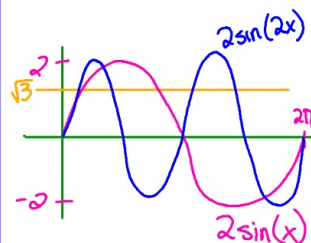
$$x = \frac{\pi}{6}, \frac{11\pi}{6}, \frac{7\pi}{6}, \frac{5\pi}{6}$$

$$-\frac{\pi}{6}, -\frac{7\pi}{6}$$

for $0 \leq x \leq 2\pi$

Solve:

$$2\sin(2x) = \sqrt{3}$$



$$0 \leq x \leq 2\pi$$

multiply the domain by 2

$$0 \leq 2x \leq 4\pi$$

$$\frac{2\sin(2x)}{2} = \frac{\sqrt{3}}{2}$$

$$\sin(2x) = \frac{\sqrt{3}}{2}$$

$$\sin^{-1}(\sin(2x)) = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

$$2x = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$$

$$\frac{\pi}{3} + 2\pi = \frac{\pi}{3} + \frac{6\pi}{3} = \frac{7\pi}{3}$$

$$\frac{2x}{2} = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{7\pi}{3}, \frac{8\pi}{3}$$

$$\frac{2\pi}{3} + 2\pi = \frac{2\pi}{3} + \frac{6\pi}{3} = \frac{8\pi}{3}$$

$$x = \frac{\pi}{6}, \frac{2\pi}{6}, \frac{7\pi}{6}, \frac{8\pi}{6}$$

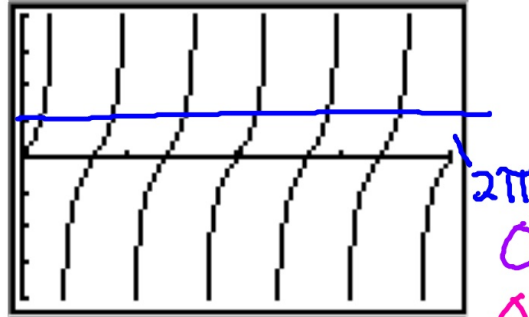
$$\frac{\frac{\pi}{3}}{2} = \frac{\pi}{3} \cdot \frac{1}{2} = \frac{\pi}{6}$$

$$\frac{\pi}{3}, \frac{4\pi}{3}$$

Find all solutions on
the interval $[0, 2\pi)$

$$0 \leq x < 2\pi$$

$$\tan(3x) = 1$$



$$0 \leq x < 2\pi$$

$$0 \leq 3x < 6\pi$$

$$\tan(3x) = 1$$

$$\tan^{-1}(\tan 3x) = \tan^{-1}(1)$$

$$3x = \tan^{-1}(1)$$

$$\frac{3x}{3} = \frac{\pi}{4}, \frac{5\pi}{4}, \frac{9\pi}{4}, \frac{13\pi}{4}, \frac{17\pi}{4}, \frac{21\pi}{4}$$

$$\frac{\pi}{4} + 2\pi = \frac{\pi}{4} + \frac{8\pi}{4} = \frac{9\pi}{4}$$

$$\frac{\pi}{4} + 3\pi = \frac{13\pi}{4}$$

$$\frac{\pi}{4} + 4\pi = \frac{17\pi}{4}$$

$$\frac{\pi}{4} + 5\pi = \frac{21\pi}{4}$$

$$x = \frac{\pi}{12}, \frac{5\pi}{12}, \frac{9\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12}, \frac{21\pi}{12}$$

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#6-30 (multiples of 3 - skip #21), 41

Pg 200

#3, 5, 7, 13, 15, 19,

20, 25, 31, 35, 48

pg 190 #4 - 18 (even), 32,

36 - 48 (even)