Tests back, today

Biggest concern: Time commitment

WebAssign Progress POOR as a group.

Make appointments for 1-on-1 help.

TEST 1's always the toughest.

Cultural thing.

Daily Hand-in.

In general, learn to press ahead without someone personally holding your hand.

I'm not seeing 9 hours per week from most student

Daily work

Chapter 2 Questions?

Anyone engage

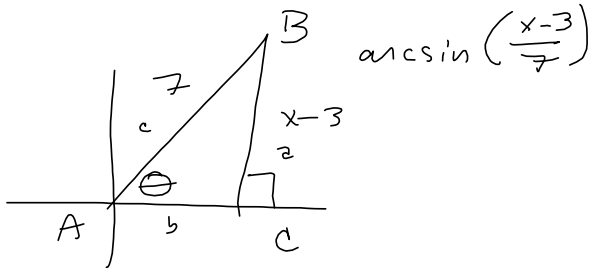
$\tan\left(\arcsin\left(\frac{x-3}{7}\right)\right) = \tan\theta$

Assume on these we're in QI

$7^2 - (x-3)^2 = b^2$

$\sqrt{49-(x-3)^2} = b$

$\tan\theta = \frac{x-3}{\sqrt{49-(x-3)^2}}$



$\arcsin\left(\frac{x-3}{7}\right)$

$$\frac{\cot^2\theta}{\csc\theta} = \frac{\frac{\cos^2\theta}{\sin^2\theta}}{\frac{1}{\sin\theta}} = \frac{\cos^2\theta}{\sin^2\theta} \cdot \frac{\sin\theta}{1} = \frac{\cos^2\theta}{\sin\theta} = \frac{1-\sin^2\theta}{\sin\theta}$$

$$\frac{\frac{2}{3}}{\frac{5}{7}} = \frac{2}{3} \cdot \frac{7}{5} = \frac{14}{15}$$

$$(a-b)(a+b) = a^2 - b^2$$

$$\frac{1-\sin^2\theta}{\sin\theta} = \text{GOAL}$$

$$\sqrt{\frac{1+\sin\theta}{1-\sin\theta} \cdot \left(\frac{1+\sin\theta}{1+\sin\theta}\right)}$$

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

$$= \frac{|1+\sin\theta|}{\sqrt{\cos^2\theta}} = \frac{1+\sin\theta}{|\cos\theta|}$$

$$\sqrt{x^2} = |x|$$

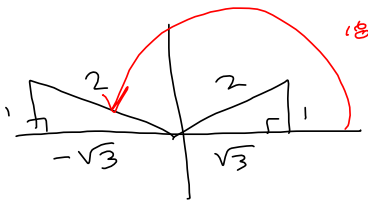
$$\sqrt{x}^2 = x$$

$$i^2\sqrt{2}^2 = 1-2$$

$$\left(\frac{1}{1+\sqrt{2}}\right)\left(\frac{1-\sqrt{2}}{1-\sqrt{2}}\right) = \frac{1-\sqrt{2}}{1-2}$$

$$= \frac{1-\sqrt{2}}{-1} = \sqrt{2}-1$$

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



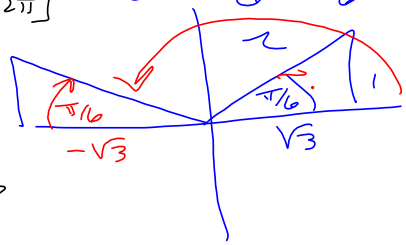
$180° - 30° = 150°$

$\Rightarrow \theta \in \{30°, 150°\} \subseteq [0, 360°]$

Now all solutions

$\theta \in \{30° + 360°n, 150° + 360°n \mid n \in \mathbb{Z}\}$

OR $\theta \in \{\frac{\pi}{6}, \frac{5\pi}{6}\} \subseteq [0, 2\pi]$ $\quad \pi - \frac{\pi}{6} = \frac{6\pi - \pi}{6} = \frac{5\pi}{6}$



ALL solns

$\{\frac{\pi}{6} + 2\pi n, \frac{5\pi}{6} + 2\pi n \mid n \in \mathbb{Z}\}$

$= \{x + 2\pi n \mid x = \frac{\pi}{6}, \frac{5\pi}{6}, n \in \mathbb{Z}\}$

Set-builder Notation

$\{$member of club $\mid$ conditions on members$\}$

over 21

$\{$person $\mid$ person is over 21$\}$

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

$4x^3 + 4x^2 - 3x - 3$

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

$= (x+1)(4x^2-3) = 0$

$x+1=0$ OR $4x^2-3=0$

$x=-1$ OR $4x^2 = 3$

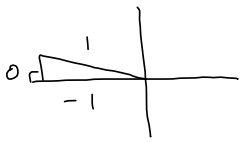
$x^2 = \frac{3}{4}$

No x-term?

Square-root-property two times!

MAT 121 TEST 1 (College Algebra)

$\cos\theta = -1$



π OR 180°

$\sqrt{x^2} = \sqrt{\frac{3}{4}} \Rightarrow |x| = \frac{\sqrt{3}}{\sqrt{3}}$

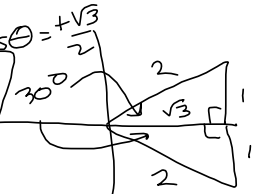
$x = \pm\sqrt{\frac{3}{4}} = \pm\frac{\sqrt{3}}{2}$

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

$x \in \{180^\circ, 30^\circ, 150^\circ, 210^\circ, 330^\circ\}$

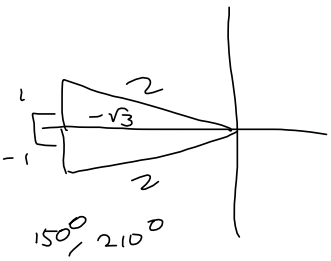
$= \{\pi, \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\}$

if restricted to $[0, 2\pi]$



$30^\circ,\ 360^\circ - 30^\circ = 330^\circ$

$\frac{\pi}{6},\ \frac{11\pi}{6}$



$150^\circ,\ 210^\circ$

$\frac{5\pi}{6},\ \frac{7\pi}{6}$

ALL SOLUTIONS in $\mathbb{R}$ = Real Number Set

$\{x + 360^\circ n \mid x = 30^\circ, 150^\circ, 180^\circ, 210^\circ, 330^\circ, n \in \mathbb{Z}\}$

$\{x + 2\pi n \mid x = \frac{\pi}{6}, \frac{5\pi}{6}, \pi, \frac{7\pi}{6}, \frac{11\pi}{6}, n \in \mathbb{Z}\}$

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

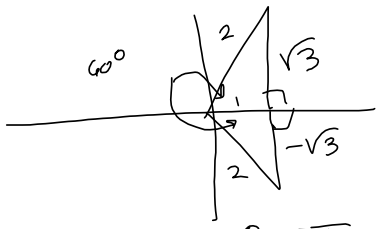
$\cos(3t)$ has 3 times the frequency of $\cos(t)$, i.e., $\frac{1}{3}$ the wavelength

So, to find all solns $t \in [0, 2\pi]$

we must find all $3t$ in $[0, 6\pi]$

$2\cos(3t) = 1$

$\cos(3t) = \frac{1}{2}$



$\frac{\pi}{3}$ or 60°, $\frac{5\pi}{3}$ or 300°

$\frac{\pi}{3}, \frac{\pi}{3}+2\pi, \frac{\pi}{3}+4\pi,$ or $\frac{5\pi}{3}, \frac{11\pi}{3}, \frac{17\pi}{3}$, ~~$\frac{23\pi}{3}$~~ Too far

$\frac{\pi}{3}, \frac{7\pi}{3}, \frac{13\pi}{3},$

So $3t = \frac{\pi}{3}, \frac{7\pi}{3}, \frac{13\pi}{3}, \frac{5\pi}{3}, \frac{11\pi}{3}, \frac{17\pi}{3}$

$\Rightarrow t = \frac{\pi}{9}, \frac{7\pi}{9}, \frac{13\pi}{9}, \frac{5\pi}{9}, \frac{11\pi}{9}, \frac{17\pi}{9}$

My videos are heuristic learning

↳ Problem-based