5.2.3 #7 just wanted you to check $x=\frac{\pi}{12}$.

Here's how to solve $3\tan^2(2x)-1=0$

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

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

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

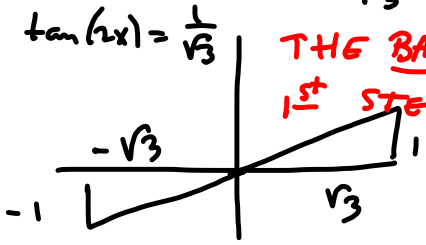
Solve for $2x$.

Then find all x's.

$x\in[0,2\pi) \Rightarrow$

$2x\in[0,4\pi)$ so find all $2x$'s in $[0,4\pi)$!

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



THE BASIC 1st STEP!

MUST-KNOW STUFF.

$x\in[0,360^\circ) \Rightarrow 2x\in[0,720^\circ)$:) how far to go!

$2x=30^\circ, 210^\circ, 30^\circ+360^\circ, 210^\circ+360^\circ$

$30^\circ, 210^\circ, 390^\circ, 570^\circ$

$2\overline{)570}$ R 285

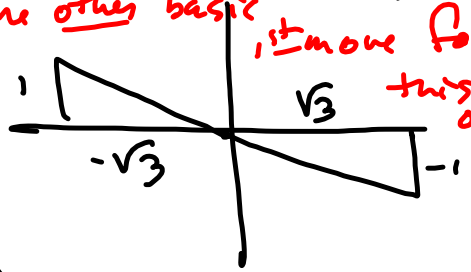
So $x=15^\circ, 105^\circ, 195^\circ, 285^\circ$

$\frac{\pi}{12}, \ldots$ etc

I do 'em in radians, myself, but degrees may be better.

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

The other basic 1st move for this one.



$2x=150^\circ, 150^\circ+360^\circ, 330^\circ, 330^\circ+360^\circ$

$=150^\circ, 510^\circ, 330^\circ, 690^\circ$

$=150^\circ, 330^\circ, 510^\circ, 690^\circ$

So $x=75^\circ, 165^\circ, 255^\circ, 345^\circ$

All solns $x\in[0,2\pi)$ to $3\tan^2x-1=0$