(i) The solutions for $\tan^2(\theta) = 3$

were $\{60^\circ, 120^\circ, 240^\circ, 300^\circ\}$

(ii) The new equation is $\tan^2\underbrace{\left(\theta + \frac{\pi}{2}\right)}_{\text{rename this parameter}} = 3$

$\beta = \theta + \frac{\pi}{2}$

But in (i) we already solved for β:

$\beta \in \{60^\circ, 120^\circ, 240^\circ, 300^\circ\}$

thus $\beta = \theta + \frac{\pi}{2} \Rightarrow \theta = \beta - \frac{\pi}{2} = \beta - 90^\circ$

to find θ

$\Rightarrow \theta \in \{\underbrace{60^\circ - 90^\circ}_{-30^\circ}, \underbrace{120 - 90^\circ}_{30^\circ}, \underbrace{240 - 90^\circ}_{150^\circ}, \underbrace{300 - 90^\circ}_{210^\circ}\}$

neg. = bad rotation for this angle, so fix it:

"-30°" $= 360^\circ - 30^\circ = 330^\circ$.

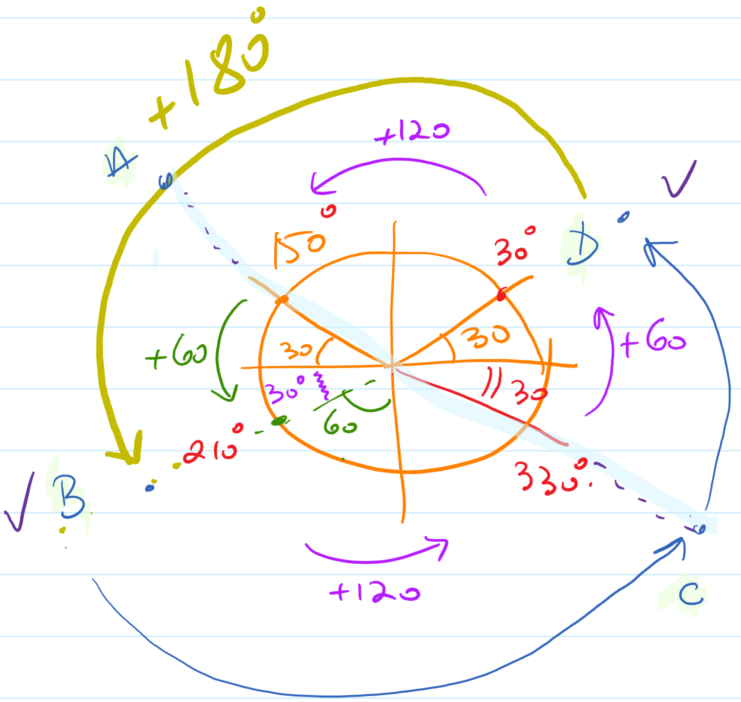
rewrite:

$\Rightarrow \theta \in \{330^\circ, 30^\circ, 150^\circ, 210^\circ\}$

sort:

$\theta \in \{30, 150, 210, 330\}$

$+120 \quad +60 \quad 120$



in radians:

$120° = \pi - 60$

$= \pi - \frac{\pi}{3}$

$= \frac{3\pi - \pi}{3} = \frac{2\pi}{3}$

B & D:

$\alpha + n\pi$

A & C:

$\underbrace{\alpha + 120}_{A} + \underbrace{n \cdot 180}_{\text{rotate to C \& further}} =$

$= \alpha + \frac{2\pi}{3} + n.\pi$

Remember

$\alpha = 30° = \frac{\pi}{6}$

$\frac{\pi}{6} + \frac{2\pi}{3} = \frac{\pi + 4\pi}{6} = \frac{5\pi}{6}$

SOLUTIONS:

$$\boxed{\begin{array}{ccc} \text{B \& D:} & & \text{A \& C:} \\ \frac{\pi}{6} + n.\pi & \& & \frac{5\pi}{6} + n\pi \\ & n \in \mathbb{N}, n \geq 0 & \end{array}}$$

$n \in \mathbb{N}$

there is no point to have angles $< 0°$ (with a clockwise rotation) they just get readjusted back into the normal they just get readjusted back into the normal positive counter-clockwise anyway.