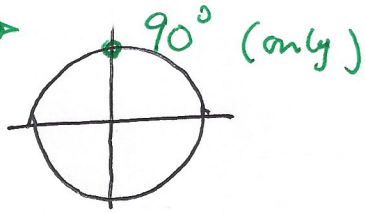
**11.** Find all degree solutions for $\theta$.

$\csc(4\theta) = 1$

arg = $4\theta$, but there is no solving interval for this; instead, we use $+360°k$.

$\csc(\text{arg}) = 1$ →




$\text{arg} = 90° + 360°k$

$4\theta = 90° + 360°k$

Divide each by 4:

$$\boxed{\theta = 22.5° + 90°k,\ k \in \mathbb{Z}}$$

**12.** Find all radian solutions for $x$.

$\sqrt{3}\cot(3x) - 1 = 0$

arg = $3x$

$\sqrt{3}\cot(\text{arg}) - 1 = 0$

$\sqrt{3}\cot(\text{arg}) = 1$

$\cot(\text{arg}) = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

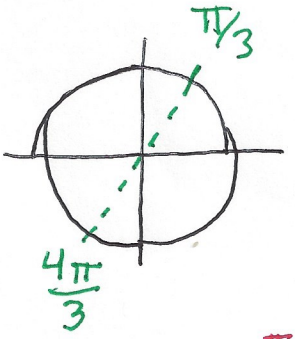
$\cot(\text{arg}) = \frac{\sqrt{3}}{3}$

$\text{arg} = \frac{\pi}{3} + \pi k$

$3x = \frac{\pi}{3} + \pi k$

multiply each side by $\frac{1}{3}$:

$$\boxed{x = \frac{\pi}{9} + \frac{\pi}{3}k,\ k \in \mathbb{Z}}$$




Because $\frac{\pi}{3}$ and $\frac{4\pi}{3}$ are <u>diametrically opposed</u> (opposite sides of the same diameter), they differ by 180°, or $\pi$. So, we add $\pi k$ to the Q I value, not $2\pi k$.