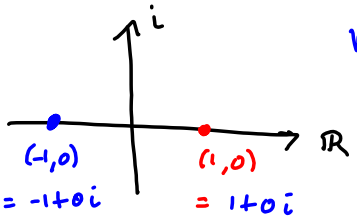
There are 2 square roots of +1

$\sqrt{1}$ signifies the principal square root. It's the positive one.



$\sqrt{1} = 1$

The other square root is $-1 = -1+0i$

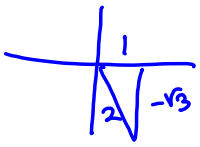
$0^\circ = 360^\circ$

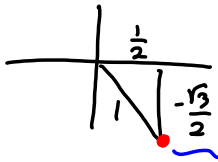
$\frac{1}{2}(360^\circ) = 180^\circ$

$\frac{300^\circ}{5} = 60^\circ$

360° or 2π radians around the circle. To get 2nd square root, from the principal square root, add $\frac{360^\circ}{2} = 180^\circ$

Find all 5th roots of $32\left(\frac{1}{2} - \frac{\sqrt{3}}{2}i\right)$





$= 32(\cos(300^\circ) + i\sin(300^\circ))$

$\frac{1}{2} - \frac{\sqrt{3}}{2}i$

The "principal" 5th root of

$z = 32(\cos 300^\circ + i\sin 300^\circ)$ is

$\sqrt{z} = 32^{\frac{1}{5}}\left(\cos\frac{300^\circ}{5} + i\sin\frac{300^\circ}{5}\right)$

$= 2(\cos 60^\circ + i\sin 60^\circ)$

To get the other 4 5th roots, add

$72^\circ = \frac{360^\circ}{5}$ to the 60°,

The rest of 'em:

$2(\cos 132^\circ + i\sin 132^\circ)$

$2(\cos 204^\circ + i\sin 204^\circ)$

$2(\cos 276^\circ + i\sin 276^\circ)$

$2(\cos 348^\circ + i\sin 348^\circ)$

$2(\cos 420^\circ + i\sin 420^\circ)$

$= (2\cos 60^\circ + i\sin 60^\circ)$

276
72
348

$\left(\frac{2\pi}{5}\right)\left(\frac{\pi}{180}\right) = \frac{2\pi}{5}$

Cube roots of $27i$:

$27(\cos 90^\circ + i\sin 90^\circ)$:

$3(\cos(30^\circ) + i\sin(30^\circ))$

$3(\cos(150^\circ) + i\sin(150^\circ))$

$3(\cos(270^\circ + i\sin(270^\circ)$

$3(\cos(390^\circ + i\sin(390^\circ))$

$=$

$\frac{360}{3} = 120^\circ$