$$(-5i)^{\frac{1}{3}} = \left(5e^{\left(\frac{3\pi}{2}+2\pi n\right)i}\right)^{\frac{1}{3}}$$

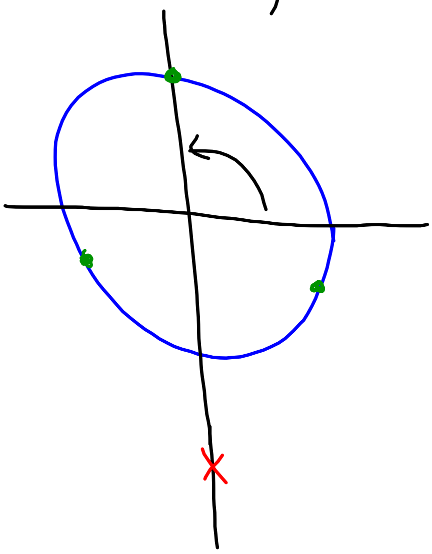
$$= \sqrt[3]{5}\, e^{\left(\frac{\pi}{2}+\frac{2\pi n}{3}\right)i}$$

$n=0: \sqrt[3]{5}\, e^{\frac{\pi}{2}}$

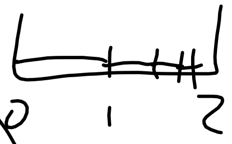
$n=1: \sqrt[3]{5}\, e^{\frac{7\pi}{6}}$

$n=2: \sqrt[3]{5}\, e^{\frac{11\pi}{6}}$.

$\sqrt[3]{5}\, i,\ \sqrt[3]{5}\left(-\frac{\sqrt{3}}{2}-\frac{1}{2}i\right),$



$1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}\cdots$



$$\frac{3}{5+2x}=\frac{3}{5}\left(\underbrace{1-\frac{2}{5}x+\frac{4}{25}x^2-\quad\cdots}_{\text{"centered at zero"}}\right)$$

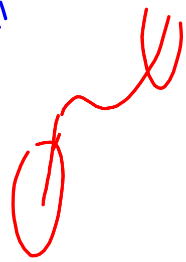
$r=-\frac{2}{5}x$

$\left|-\frac{2}{5}x\right|<1$

$\left|-\frac{2}{5}\right||x|<1$

$\frac{2}{5}|x|<1$

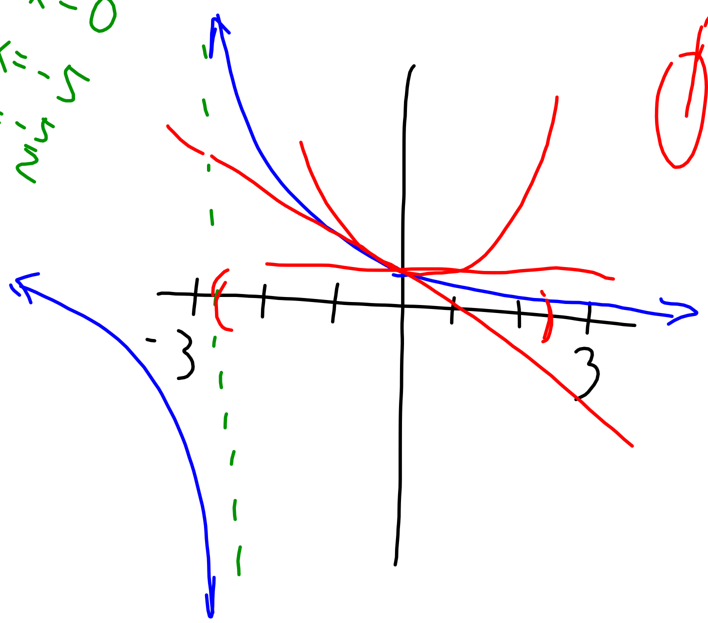
$|x|<\frac{5}{2}$



$5+2x=0$

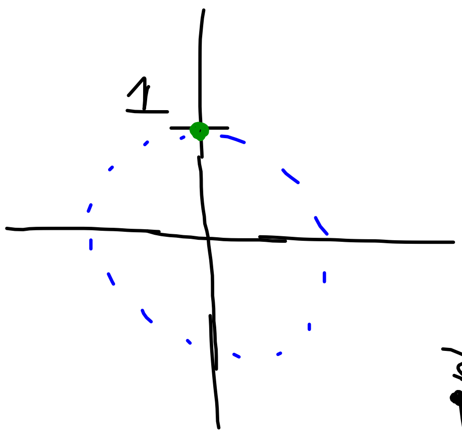
$2x=-5$

$x=-\frac{5}{2}$



$$\overset{-iz}{\curvearrowright}$$

$$i + z - iz^2 - z^3 + iz^4 - \ldots = \frac{1}{z-i}$$



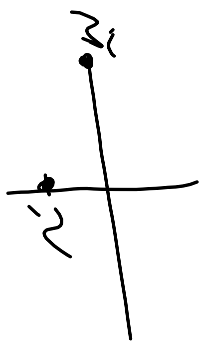
$r = -iz$

$|-iz| < 1$

$|-i||z| < 1$

$|z| < 1$

$$\frac{1}{(z+2)(z-3i)}$$



$$1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} +$$

$a_1 \quad a_2 \quad a_3 \quad a_4$

Calculate $S_1 = a_1$

$S_2 = a_1 + a_2$

$S_3 = a_1 + a_2 + a_3$

$S_1 = \frac{1}{1}$

$S_2 = \frac{3}{2}$

$S_3 = \frac{7}{4}$

$S_4 = \frac{15}{8}$

If $\lim_{n\to\infty} S_n$ exists, then that is what we say the sum is.

$$\overset{\to 2}{S_n} = \frac{2^n - 1}{2^{n-1}} = 2 - \overset{\to 0}{\frac{1}{2^{n-1}}}$$

$1-1+1-1+1-1+1-1+$

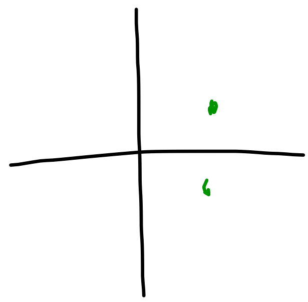
S_n like before

Define $b_n = \dfrac{S_1 + S_2 + \cdots + S_n}{n}$

Cesaro summation

Series converges to $\frac{1}{2}$ in the Cesaro sense.

n	a_n	S_n	b_n
1	1	1	$\frac{1}{1}=1$
2	-1	0	$\frac{1}{2}=\frac{1}{2}$
3	1	1	$\frac{2}{3}$
4	-1	0	$\frac{1}{2}$
5	1	1	$\frac{3}{5}$
6	-1	0	$\frac{1}{2}$
7	1	1	



X

$z_1 = 3$

$z_2 = 7$