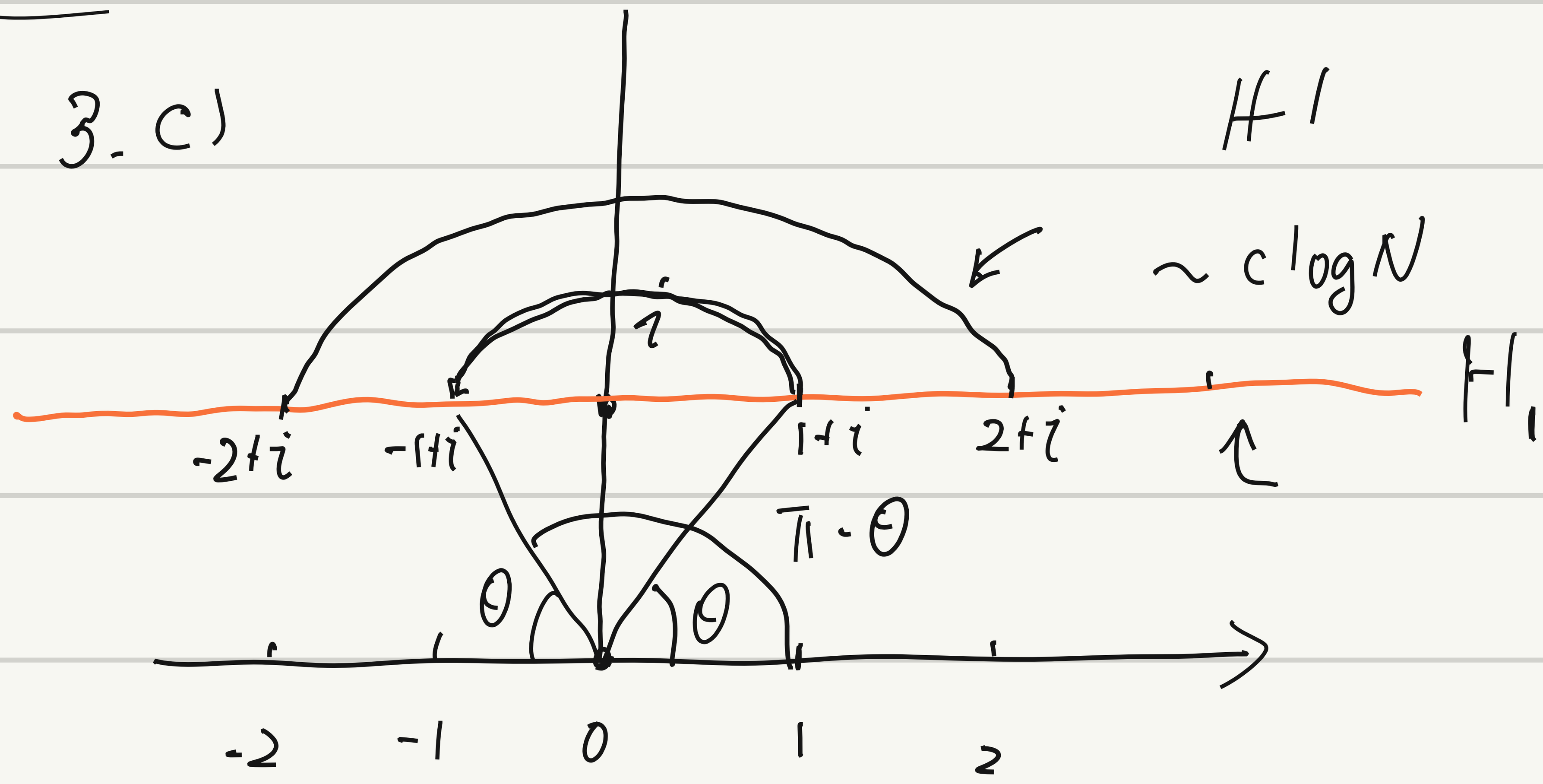
Ex 1

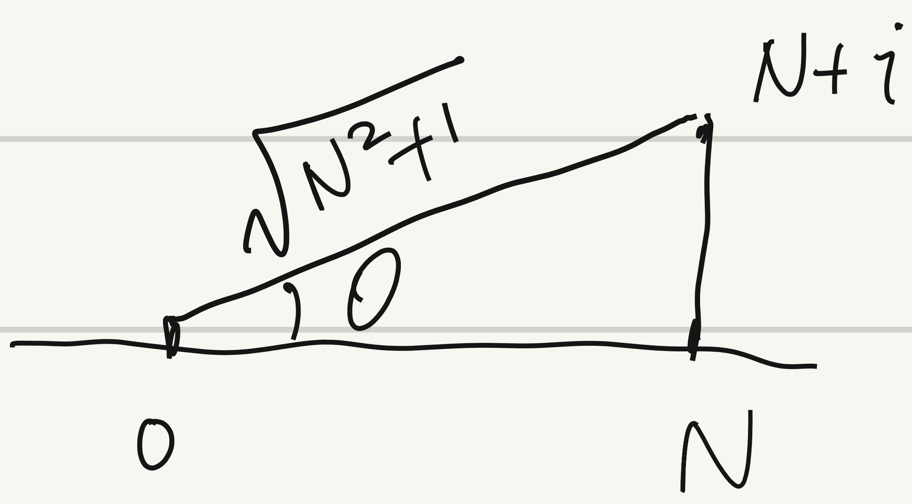
3. c)



$a = \theta \qquad b = \pi - \theta.$

$$\ell_{\mathbb{H}}(\gamma_1) = \log tg \frac{\pi - \theta}{2} - \log tg \frac{\theta}{2}$$

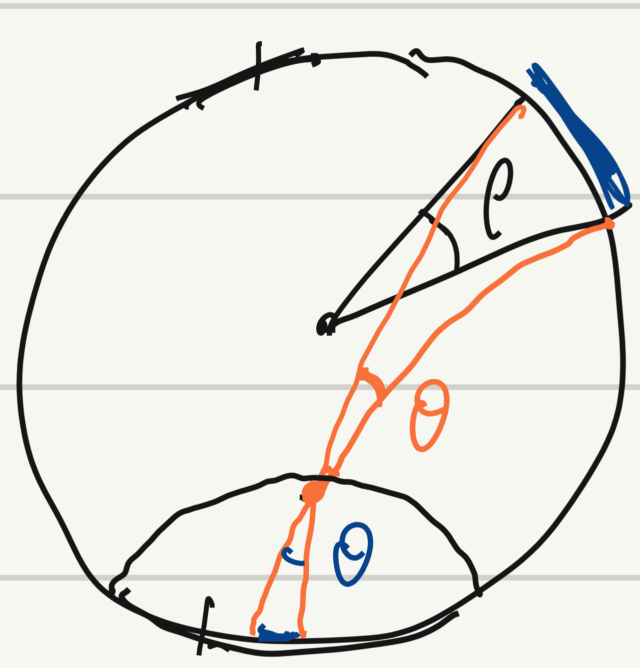
$$= \log \frac{\sin(\pi-\theta)}{\cos(\pi-\theta)+1} - \log \frac{\sin\theta}{\cos\theta + 1}$$

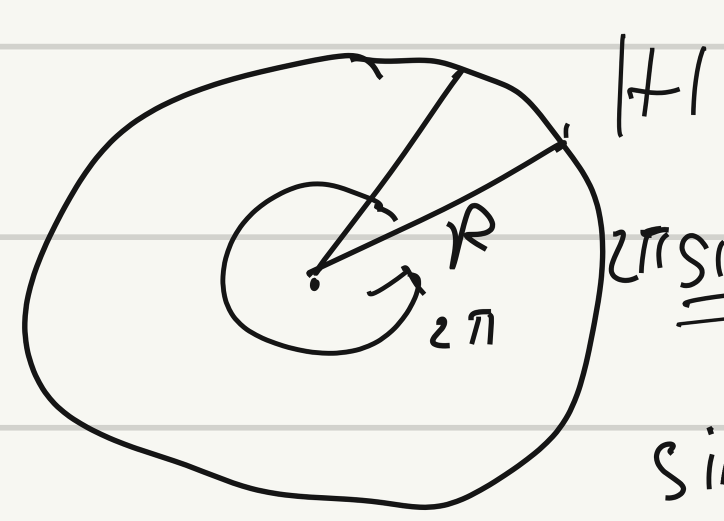


$$\cos\theta = \frac{N}{\sqrt{N^2+1}}$$

$$\sin\theta = \frac{1}{\sqrt{N^2+1}}$$

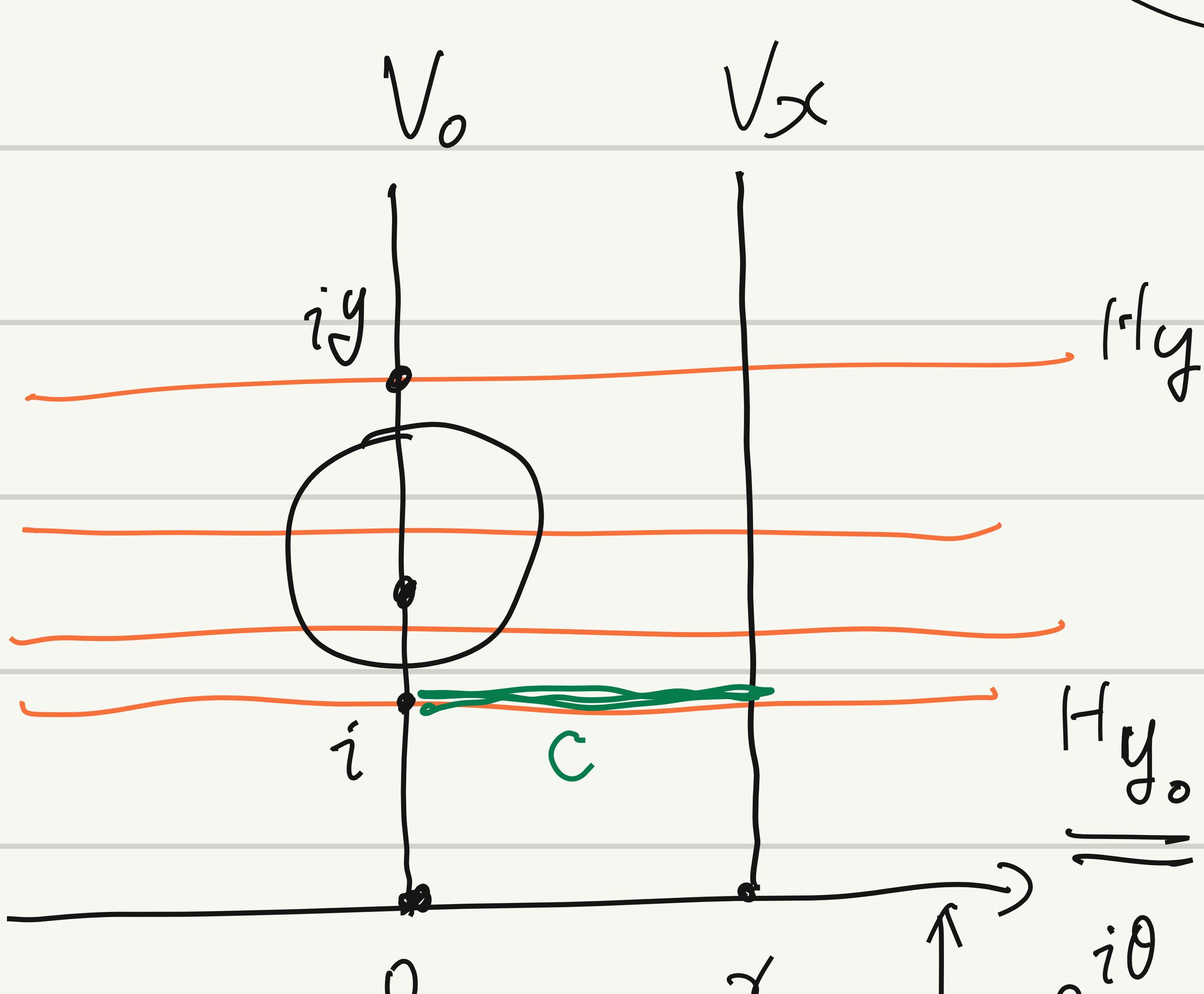
Factorization calculus and geometric probability, Ambartzumian





$\underline{2\pi \sinh R}$

$\sinh R \cdot \theta$



$\underline{H_{y_0}} \quad y_0 = 1$

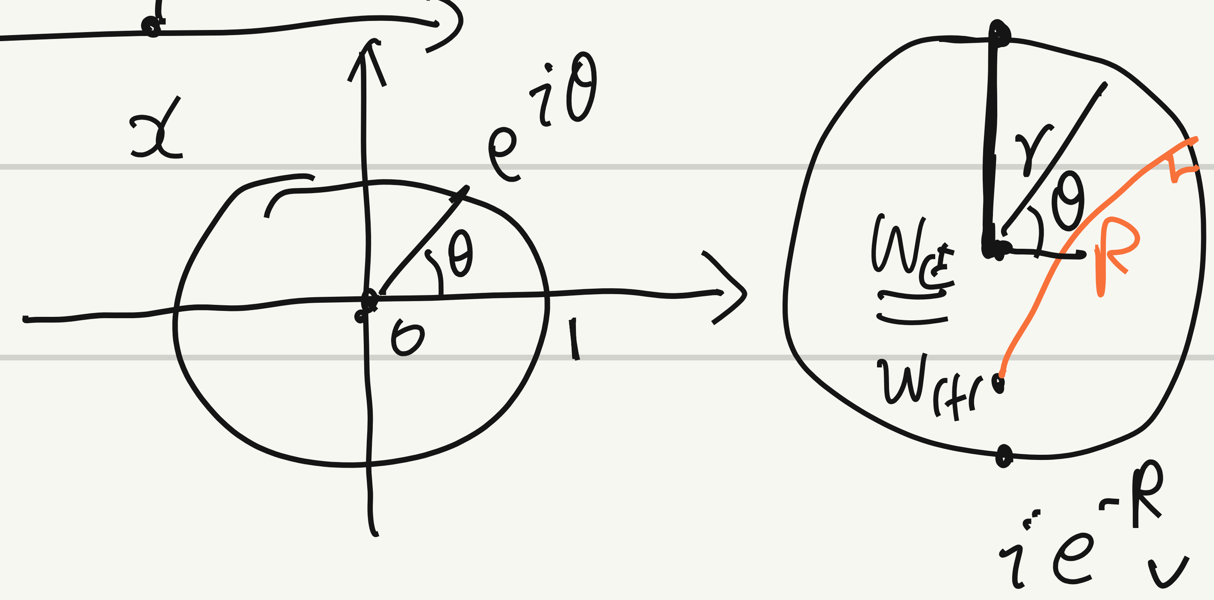
$\gamma(t) : [a,b] \longrightarrow \mathbb{H}$

$$\ell_{\mathbb{H}}(\gamma) = \int_a^b \|\dot\gamma(t)\|_{\mathbb{H}}\, dt$$

$\underline{\gamma(\theta)} = \underline{W_E} + \underline{r} \cdot \underline{e^{i\theta}}$

$[0, 2\pi] \longrightarrow \mathbb{H}$

$\theta \longmapsto \gamma(\theta)$



$W_{\mathbb{H}} = iv$

$\underline{W_E} = i(\operatorname{ch} R) v$

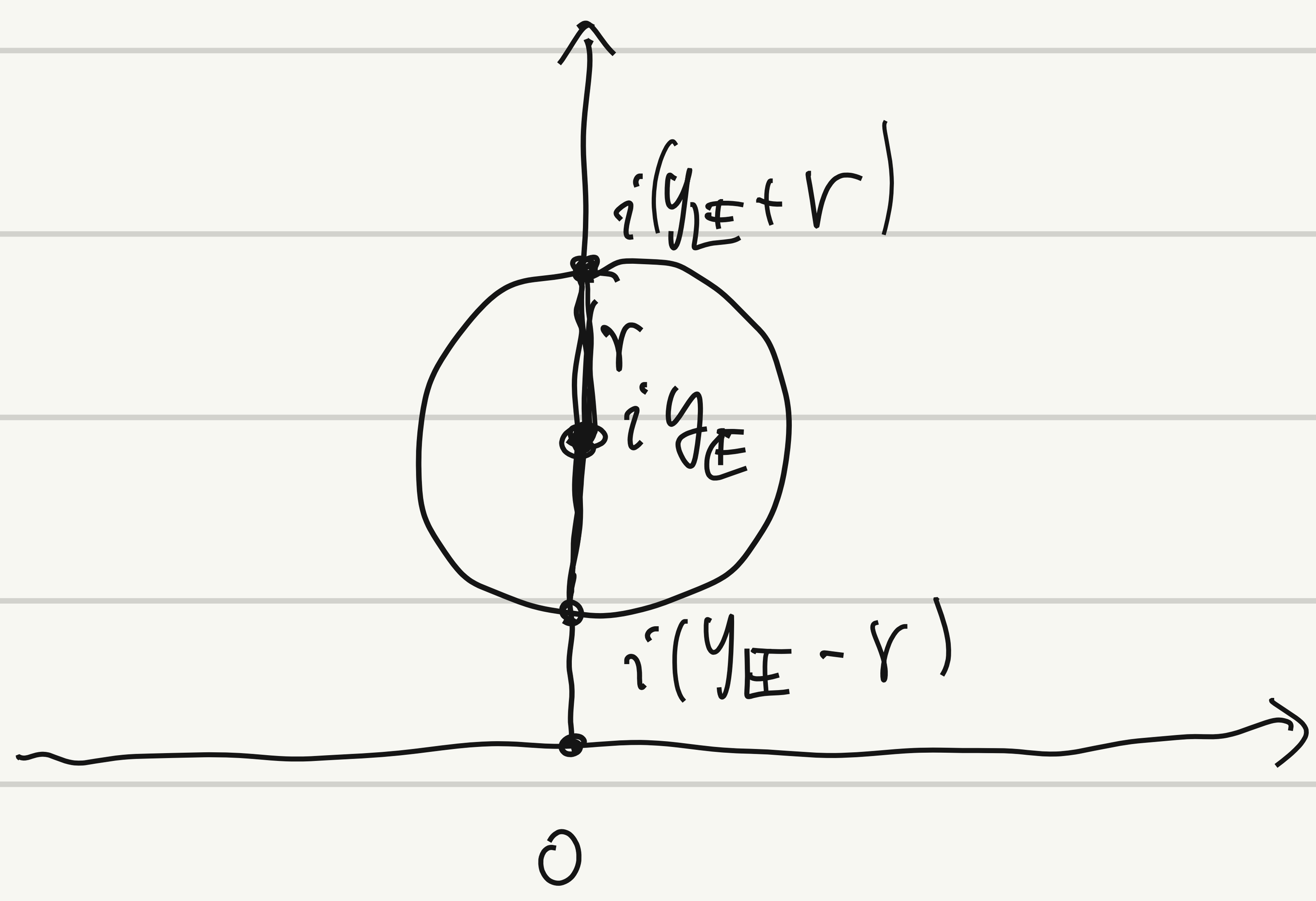
$\underline{r} = i (\operatorname{sh} R) \cdot v$

$\dot\gamma(\theta)$

$\|\dot\gamma(\theta)\|_{\mathbb{H}}$

C r Euclidean radius $2\pi r$

R hyperbolic radius $2\pi \sinh R(y_E, r)$



$$e^R = \sqrt{\frac{y_E + r}{y_E - r}}$$

$$\sinh R = \frac{e^R - e^{-R}}{2}$$

$$= \frac{\sqrt{\frac{y_E+r}{y_E-r}} - \sqrt{\frac{y_E-r}{y_E+r}}}{2}$$

$$= \frac{y_E + r - (y_E - r)}{2\sqrt{y_E^2 - r^2}} = \frac{r}{\sqrt{y_E^2 - r^2}}$$

$$\rightarrow \quad l_H(C) = 2\pi \sinh R = 2\pi \frac{r}{\sqrt{y_E^2 - r^2}}$$

$\searrow \underline{\underline{0}}$, $y_E \nearrow \infty$

$\nearrow \underline{\underline{\infty}}$, $y_E \to r$

$\underline{\underline{l_H(C) = l_E(C)}}$ $2\pi \frac{r}{\sqrt{y_E^2 - r^2}} = 2\pi r$

$$\sqrt{y_E^2 - r^2} = 1$$

$$y_E^2 = 1 + r^2 \qquad \underline{\underline{y_E}} = \sqrt{1 + \underline{\underline{r}}^2}$$