

Recap

For Euclidean disk of radius r :

$$\text{Area} \sim r^2$$

For hyperbolic disk of radius r :

$$\text{Area} \sim e^r$$

Exponential Growth!

Disk of radius 10, increase radius by 1.

% increase in area of disk?

E^2
Euclidean



21% increase

H^2
Hyperbolic



172% increase!



$$d_H(a,b) = \int_a^b \frac{ds}{y}$$



$$d_H(l) = \int_a^{2a} \frac{ds}{y} = \int_0^{2a} \frac{dx}{2a} = \frac{2a}{2a} = \boxed{1}$$

In Euclidean space, can scale things up and down.



In hyperbolic space, scale is fixed!

