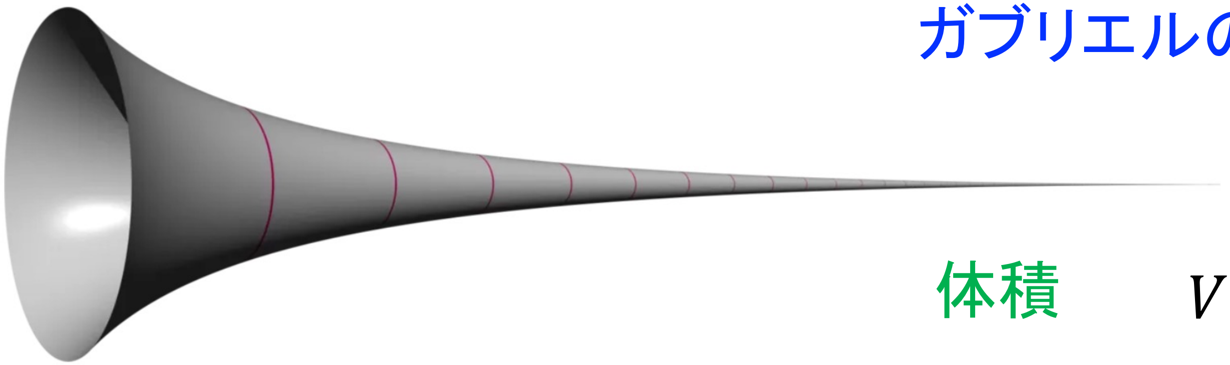
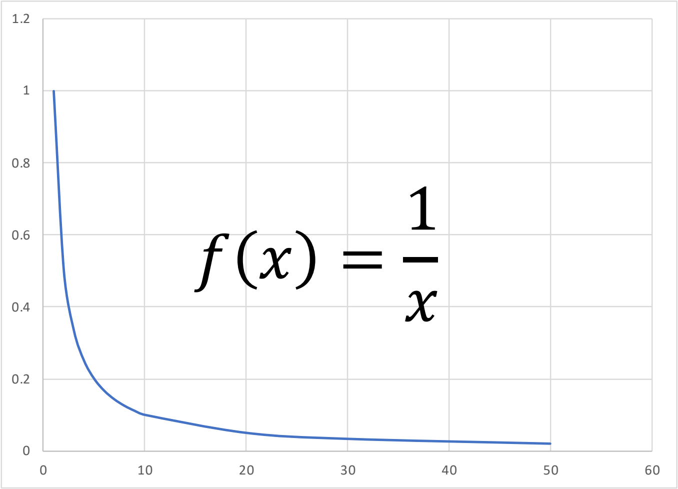
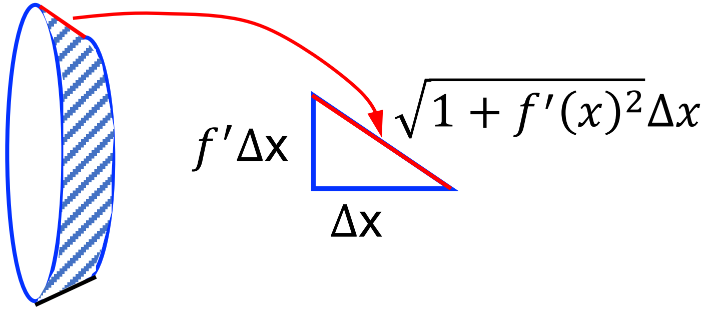
ガブリエルのラッパ







体積

$$V=\pi\int_1^\infty \frac{1}{x^2}dx=\lim_{n\to\infty}\pi\int_1^n \frac{1}{x^2}dx$$

$$=\lim_{n\to\infty}\pi\left[-\frac{1}{x}\right]_1^n=\lim_{n\to\infty}\pi\left(-\frac{1}{n}+1\right)$$

$$=\pi$$

断面積

$$A_c=\int_1^\infty \frac{1}{x}dx=\lim_{a\to\infty}\int_1^a \frac{1}{x}dx$$

$$=\lim_{a\to\infty}[lnx]_1^a=\lim_{a\to\infty} lna=\infty$$

表面積

$$A=2\pi\int_1^\infty \frac{1}{x}\sqrt{1+f'(x)^2}dx>2\pi A_c=\infty$$