

$$\lim_{n \rightarrow \infty} \int_0^a \frac{e^x}{1+x^n} dx$$

$$= \int_0^a \lim_{n \rightarrow \infty} \left(\frac{e^x}{1+x^n} \right) dx$$

$$= \int_0^1 \lim_{n \rightarrow \infty} \left(\frac{e^x}{1+x^n} \right) dx + \int_1^a \lim_{n \rightarrow \infty} \left(\frac{e^x}{1+x^n} \right) dx$$

$$= e^1 - e^0 = e - 1$$