

$$a) \int_{\frac{1}{x}}^1 \frac{1}{t} dt = a \ln \left| \frac{1}{t} \right| \Big|_{\frac{1}{x}}^1 = a(0 - \ln \frac{1}{x}) = -a \ln \frac{1}{x}$$

$$\int_{\frac{1}{x}}^1 \frac{1}{t} dt = \ln \left| \frac{1}{t} \right| \Big|_{\frac{1}{x}}^1 = 0 - \ln \frac{1}{x} = -a \ln \frac{1}{x}$$

b) the area is a times as large.

c) the area is infinite.