Logs and Exponents

a) Prove that for $x > 1$:

$$ a \int_{1/x}^{1} \frac{1}{t} \, dt = \int_{(1/x)^a}^{1} \frac{1}{t} \, dt. $$

b) Assume $x > 1$. What is the geometric interpretation of the result of part a?

c) What does this tell you about the area between the $x$-axis and the graph of $\frac{1}{x}$ over the interval from 0 to 1?