



QUESTION
 Suppose that the number of people per person is given by the function $f(x) = \frac{1}{x}$, where x is the number of people. Find the average number of people per person for a group of 10 people.

SOLUTION
 The average number of people per person for a group of 10 people is given by the average value of the function $f(x) = \frac{1}{x}$ over the interval $[1, 10]$. The average value of a function $f(x)$ over the interval $[a, b]$ is given by the formula $\frac{1}{b-a} \int_a^b f(x) dx$. In this case, $a = 1$ and $b = 10$, so the average value is $\frac{1}{10-1} \int_1^{10} \frac{1}{x} dx$. The integral $\int_1^{10} \frac{1}{x} dx$ is the natural logarithm of 10, $\ln 10$. Therefore, the average number of people per person is $\frac{\ln 10}{9}$.