For the week of September 08-12

1) A tank is leaking fluid at a rate of $R(t)m^3/h$, where t is measured in hours.

   (a) Write a definite integral that calculates the amount of fluid lost in the first 3 hours.

   (b) If we know that $1 \leq R(t) \leq 3$ for $0 \leq t \leq 3$, give an upper and lower estimate of the amount of water lost in the first three hours.

2) Let $f(t)$ be the rate of change of earth's population, where t is measured in years.

   (a) Explain in words what is being calculated by the integral

$$\int_{2000}^{2025} f(t)dt.$$