\[
\frac{dx}{dt} = \frac{1}{t^2} \quad \text{(4)}
\]

This is an ordinary differential equation. To solve it, we can use separation of variables.

\[
\int dx = \frac{1}{t^2} dt \Rightarrow \int x \, dt = \int \frac{1}{t^2} \, dt
\]

We can integrate both sides to find the solution.

\[
x = -\frac{1}{t} + C
\]

Where \(C\) is the constant of integration. By applying initial conditions or boundary conditions, the value of \(C\) can be determined.