1. (10 pts) Find the solution of the differential equation that satisfies the given initial condition.

$$\textbf{a.}\frac{dy}{dx} = -\frac{x}{y}, \quad y(0) = 1 \qquad \textbf{b.}y' = -2xy, \quad y(0) = 1$$

2. (10 pts) Evaluate the improper integral.

$$\textbf{a.} \int_{0}^{\infty} e^{-0.05t}\,dt \qquad\qquad \textbf{b.} \int_{-\infty}^{-1} \frac{1}{x^2}\,dx$$