1. (10 points) Find a solution to the initial value problem

\[ \frac{dy}{dx} + 2y = -\frac{\sin(x)}{x} \]

\[ y\left(\frac{\pi}{2}\right) = 1 \]

2. (10 points) Find an explicit solution to the following initial value problem, then use Euler’s method with step size \( \Delta x = .1 \) to estimate \( y(.2) \).

\[ \frac{dy}{dx} = 2xy + 2x \]

\[ y(0) = 0 \]