1. (3 Points) Solve this differential equation explicitly for $y$:

$$\frac{dy}{dx} = 3x^2 e^{-y}$$

2. (3 Points) Solve this differential equation explicitly for $y$:

$$x \frac{dy}{dx} + 2y = x^3, \quad x > 0, \quad y(2) = 1.$$