Math 310, Fall 2020 HW #2 Due: Mon, Sept 14

① Solve the IVP $y' = e^t - y$, $y(0) = 1$.

② Find the general solution of the ODE

$$x y' + (2x-3) y = 4x^4.$$

③ Find the general solution of

$$\frac{y}{x} y' = 1 + 3\left(\frac{y}{x}\right)^2.$$

Note: A useful fact from calculus is that

$$\int \frac{h'(x)}{h(x)} dx = \ln(h(x)) \quad \text{when } h(x) > 0.$$