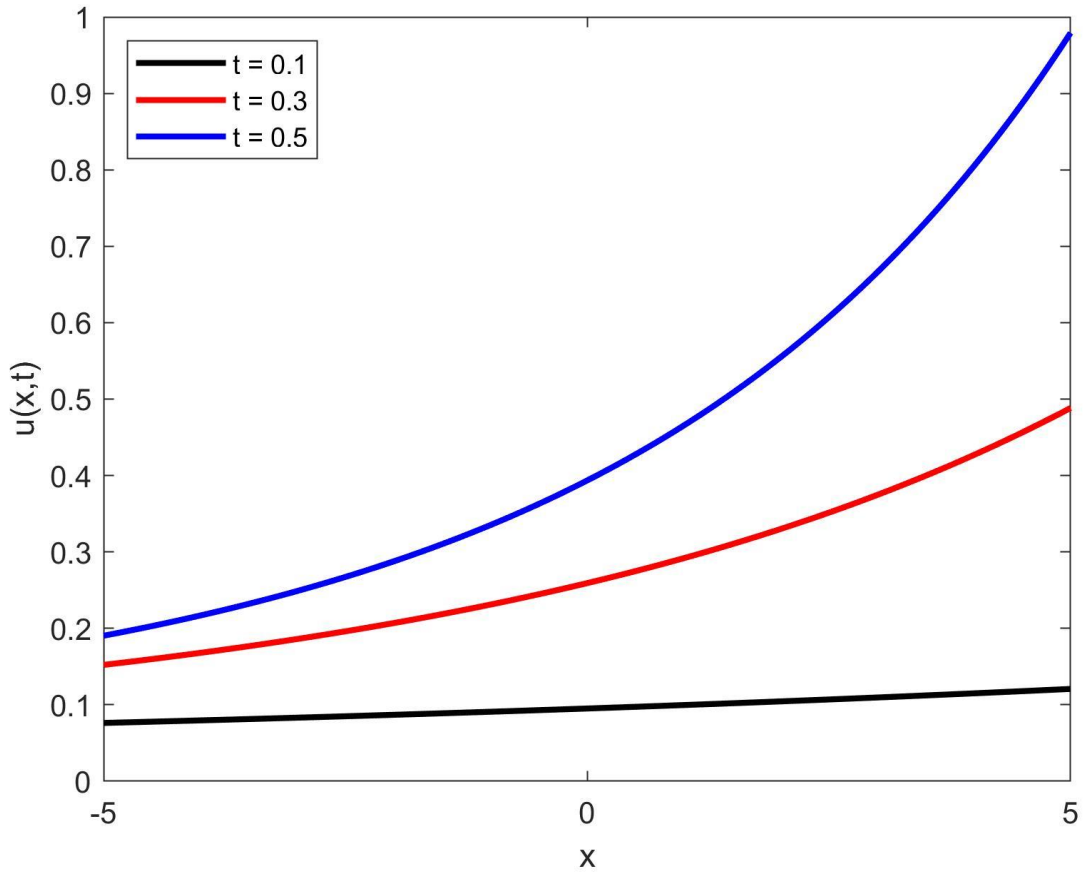


MAE/MSE 502 Spring 2022 HW5 Solution

Problem 1

$$u(x, t) = \frac{e^{xte^{-t}} - e^{-t}}{xe^{-t} + 1}$$

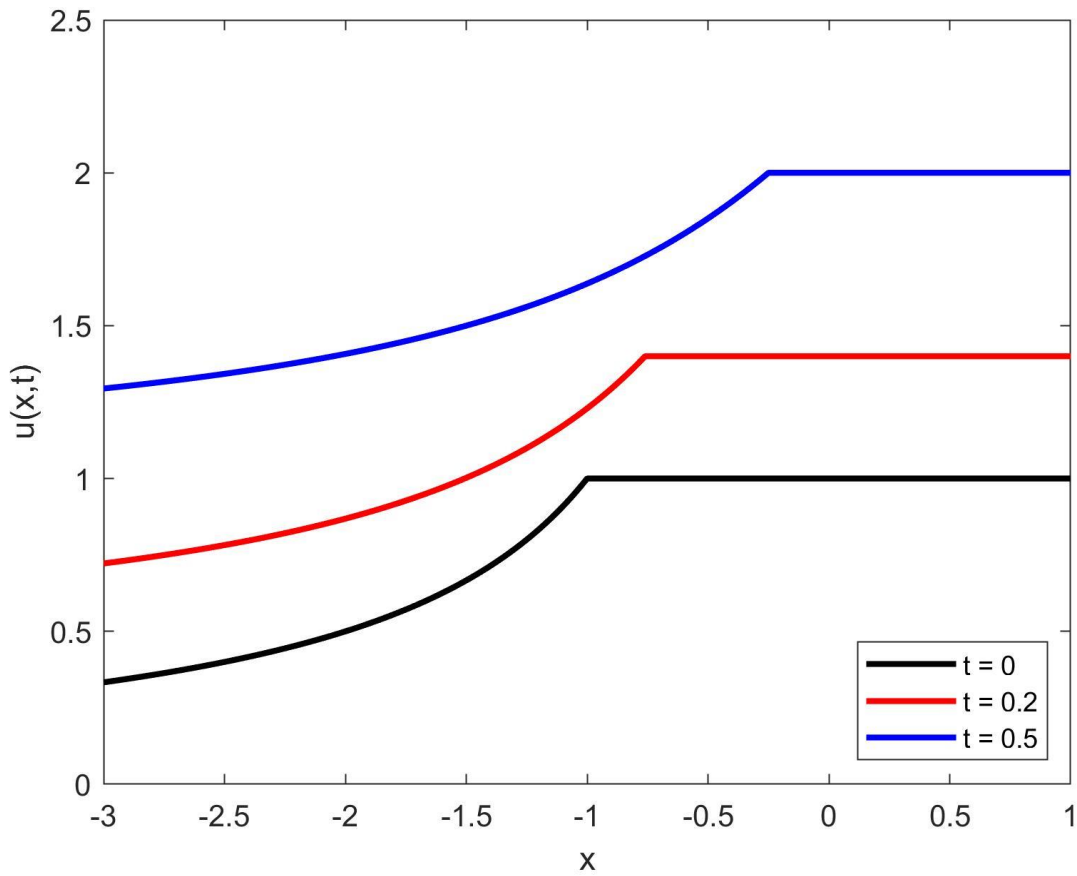
Plot:



Problem 2

$$u(x, t) = \begin{cases} -\frac{2}{(x - t^2) - \sqrt{(t^2 - x)^2 + 4t}} + 2t, & \text{if } x \leq -1 + t + t^2 \\ 1 + 2t, & \text{if } x > -1 + t + t^2 \end{cases}$$

Plot:



Problem 3

$$u(x, t) = e^t - x - 1$$

Problem 4

$$u(x, t) = 1 + \frac{x t^2}{2}$$