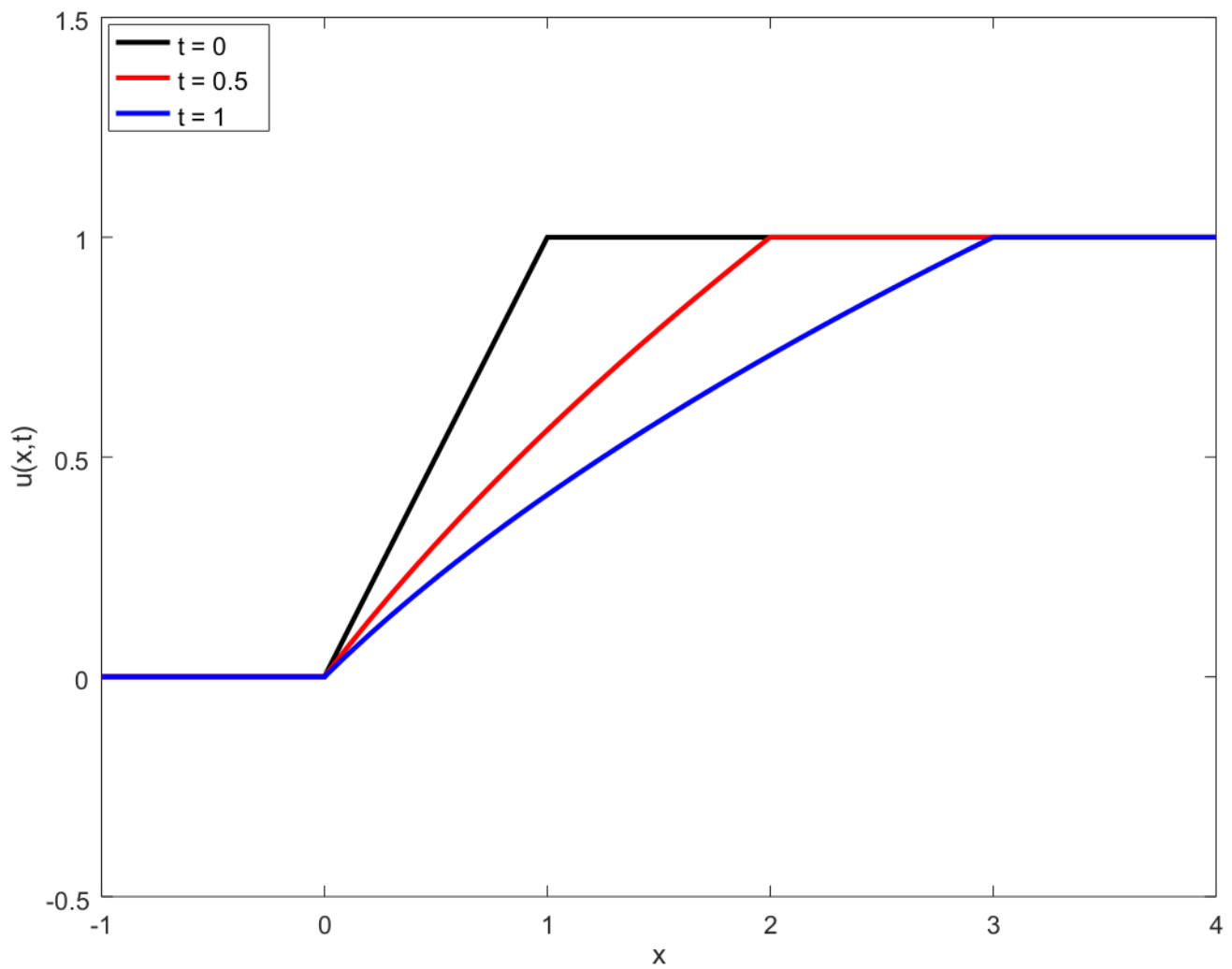


Prob 1

$$\begin{aligned} u(x, t) &= 0, \text{ if } x < 0 \\ &= \frac{-(t+1) + \sqrt{(1+t)^2 + 4tx}}{2t}, \text{ if } 0 \leq x \leq 2t+1 \\ &= 1, \text{ if } x > 2t+1 \end{aligned}$$

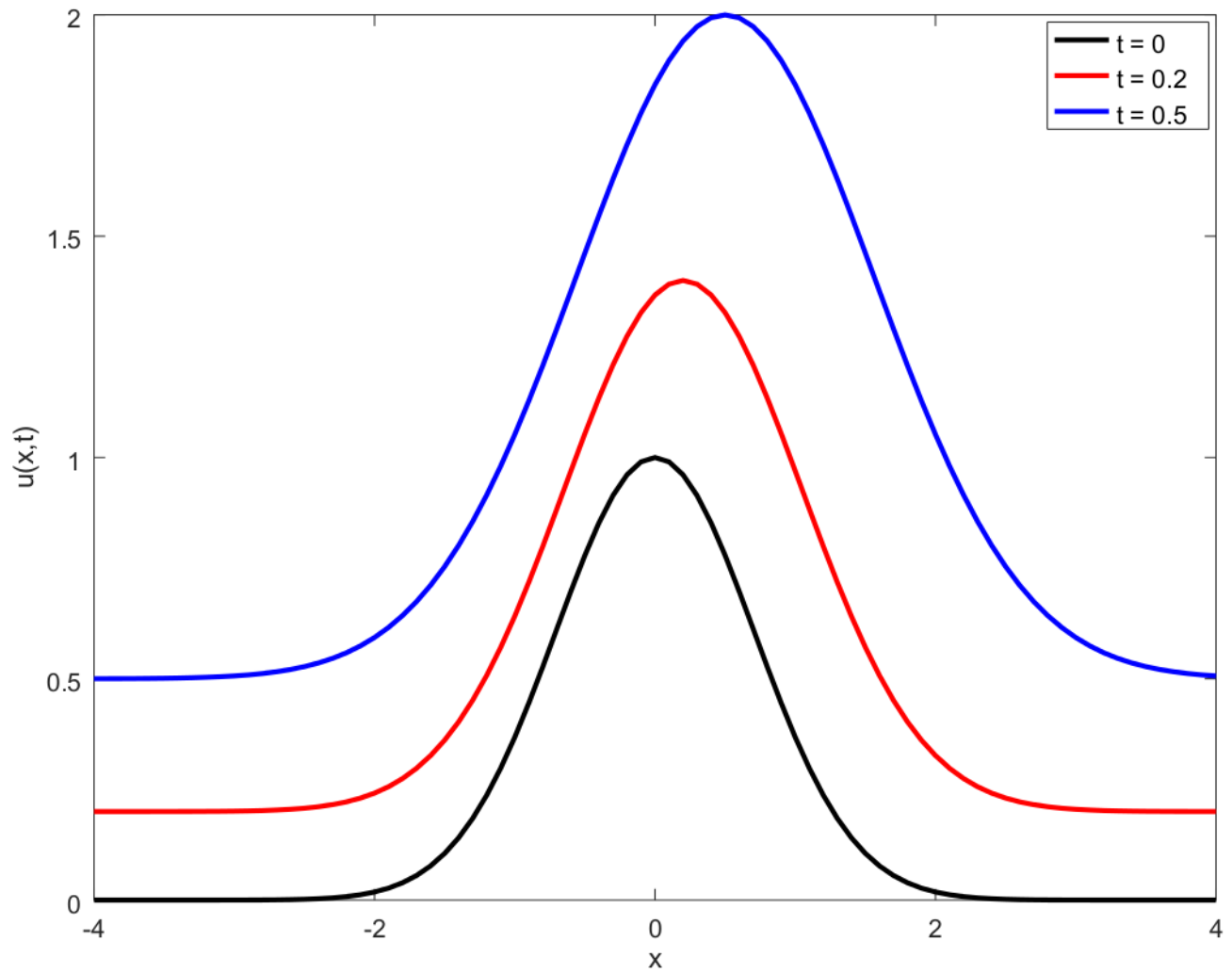
Plot:



Prob 2

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

Plot:



Prob 3

$$u(x, t) = (x-t)^2 (e^t - 1) + (x-t)(4e^t(t-1) + 5) + e^t(4(t-1)^2 + 5) - 9$$

Plot:

