

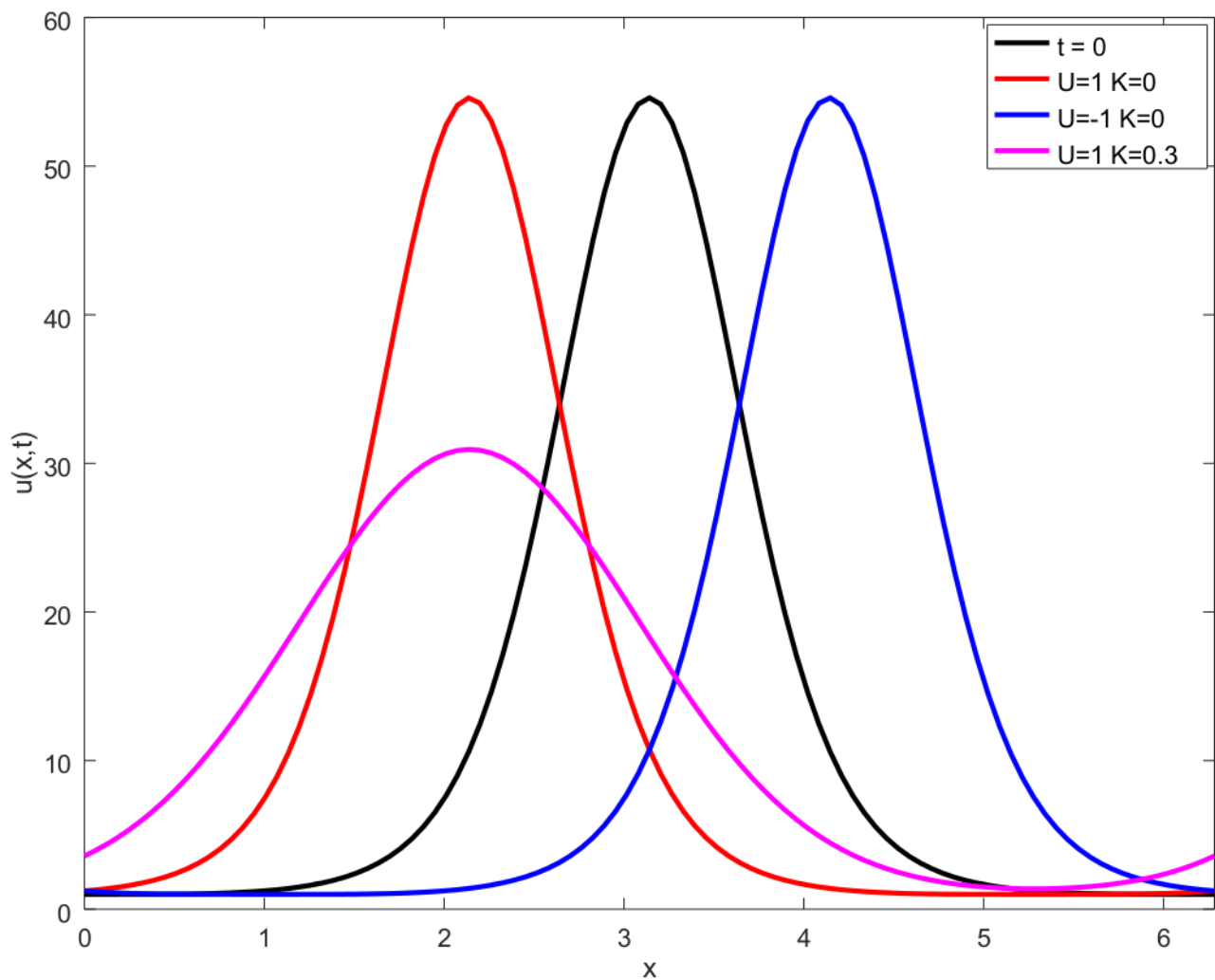
Prob 1(a)

$$u(x, t) = \sum_{n=-\infty}^{\infty} C_n(0) \exp[(inU - n^2 K)t + inx] ,$$

where

$$C_n(0) = \frac{1}{2\pi} \int_0^{2\pi} P(x) \exp(-inx) dx .$$

Plot:



Prob 1(b)

We will discuss the solution in class.

Prob 2

$$u(x, t) = (1+t) + \sin[x + \ln(1+t)]$$

Prob 3

$$u(x, t) = \left(3+t+\frac{t^2}{2}\right) + \left[\left(1+\frac{1}{\pi^4}\right)\exp(-\pi^2 t) + \left(\frac{\pi^2 t-1}{\pi^4}\right)\right]\cos(\pi x) + \exp(-4\pi^2 t)\cos(2\pi x)$$

Prob 4

$$u(x, t) = \frac{t^3}{6} + t + \cos(x) + \frac{t^2}{2}\sin(x)$$