We want to solve the concentration profile dynamics due to diffusion.

Simple model of diffusion:

\[ u(t, x) = \frac{1}{1 + ke^{-Dx^2}} = \frac{1}{1 + ke^{-dx^2}} \]

We need the simulation parameters. We need our time and space intervals to be smaller than any other quantity in the process.

\[ dx = 0.01 \]  
\[ k = D/dx^2 \]  
\[ dt = 1/k/10 \]  
\[ TotalTime = 0.01 \]

Now, we're ready to write our simulation.