HW6:

1. **Nonlinear waves:long waves limit.** One dimensional dynamics of non-linear waves in the limit of long waves can be described in terms of Kortewegde Vries equation:

$$\frac{\partial u}{\partial t} + 6u\frac{\partial u}{\partial x} + \varepsilon\frac{\partial^3 u}{\partial x^3} = 0.$$

Here $\varepsilon = \pm 1$ determines sign of cubic dispersion. This equation has single hump solitary wave solution:

$$u(t,x) = \frac{v}{2}sech^2\left(\frac{\sqrt{v}}{2}(x - vt)\right).$$

Determine what sign of ε corresponds to this solution.