

NAME: \_\_\_\_\_

## QUIZ 3

**Problem 1.** Consider the Hamilton-Jacobi equation in 1D

$$u_t + \frac{u_x^2}{2} = 0, \quad u(x, 0) = g(x) = \begin{cases} -x & x < 0 \\ x & x > 0 \end{cases}. \quad (1)$$

- a) **(9 pts)** Solve the problem using Hopf-Lax formula.
- b) **(1 pts)** For a fixed  $t > 0$ , plot the graph of your solution.

**Solution.**