Math 470- Quiz 1

ID. Num.: Name:

Question: Let $u = u(x,t)$ be the solution of the problem:

$$u_{tt} = u_{xx}, \quad x \in R, \quad t > 0$$
$$u(x,0) = f(x), \quad u_t(x,0) = 0, \quad x \in R.$$

Let also $w = w(x,t)$ be the solution of

$$w_{tt} = w_{xx}, \quad x \in R, \quad t > 0$$
$$w(x,0) = f(x) + \epsilon, \quad w_t(x,0) = 0, \quad x \in R.$$

Find $\max |u(x,t) - w(x,t)|$.