

MTH 623/Peszynska/Spring 2012

Worksheet 4.

Please show all your work. Use proper mathematical notation.

1. Use Lax-Oleinik solution to find the solution to

$$u_t + uu_x = 0,$$

with initial data $u_0(x) = H(x)x^2$. (Hint: part of the solution is $\frac{1}{2t^2}(1 + 2xt - \sqrt{1 + 4xt})$).