

HW 4

1. Find a similarity solution to the following equation

$$u_t = u_{xx}$$

$$\frac{d}{dt} \int_{-\infty}^{\infty} u(x,t) dx = 0$$

2. Find a traveling wave solutions to the system

$$u_t + v_x = u_{xx}$$

$$v_t + (u^2)_x = v_{xx}$$

with $\lim_{x \rightarrow \infty} (u, v) = (0, 0)$.