

Name: \_\_\_\_\_

418 Quiz 2

1. Find d'Alembert's solution to the initial value problem

$$u_{tt} = 4u_{xx}$$
$$u(0, x) = \frac{1}{1+x^2}$$
$$u_t(0, x) = \frac{1}{1+x^2}.$$

Describe how each of the initial conditions contributes to the solution. (It might be worthwhile to consider the effects of each initial condition separately).

2. Solve the PDE

$$\begin{aligned}u_{tt} - 5u_{xt} + 4u_{xx} &= 0, \\u(x, 0) &= x, \\u_t(x, 0) &= \sin x.\end{aligned}$$