Fall 2020   ENG 5300   Quiz 4   Jon-Michael X Grabowski

You must show **all** work to receive full credit. All work is to be your own.   December 2

This is a closed books and notes test. Be organized.   Total points: **24**   19:50 - 19:55

Submit a single black/white pdf file to BB, named using your last name.   20% noncompliance penalty

1. Determine wether the method of separation of variables can be used to replace the given partial differential equation by a pair of ordinary differential equations. If so, find the equations.

20 points

$$u_{xx} + u_{xt} + u_t = 0$$

2. §12.4 D'Alembert's Solution of the Wave Equation   4 points
   Show that because of the boundary conditions

$$\text{(a) } u(0, t) = 0, \qquad \text{(b) } u(L, t) = 0 \qquad \text{for all } t \geq 0$$

the function f in

$$u(x, t) = \frac{f(x + ct) + f(x - ct)}{2}$$

must be odd and of period $2L$.