# Math 513-131 Quiz 4 (B)

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**Q.1:** Use d'Alembert's formula to solve the wave equation $a^2\dfrac{\partial^2 u}{\partial^2 x} = \dfrac{\partial^2 u}{\partial t^2}$, $-\infty < x < \infty$ and $u(x,0) = f(x) = \sin(x)$, $u_t(x,0) = g(x) = \cos(x)$.

**Q.2:** Use Laplace transform to solve the wave equation $a^2\dfrac{\partial^2 u}{\partial^2 x} = \dfrac{\partial^2 u}{\partial t^2}$ subject to the conditions

$u(0,t) = 0,\ u(\pi,t) = 0,$ and $u(x,0) = 0,\ u_t(x,0) = 3\cos(2x) + 2\cos(3x).$