$$\frac{\partial U}{\partial t} + R(U) = L(U)$$

$$U = \begin{Bmatrix} \rho \\ \rho v_x \\ \rho v_y \\ \rho v_z \\ E \end{Bmatrix}$$

$$R(U) = \frac{\partial}{\partial x}\begin{Bmatrix} \rho v_x \\ \rho v_x^2 + p_t \\ \rho v_x v_y \\ \rho v_x v_z \\ (E + p_t) v_x \end{Bmatrix} + \frac{\partial}{\partial y}\begin{Bmatrix} \rho v_y \\ \rho v_y v_x \\ \rho v_y^2 + p_t \\ \rho v_y v_z \\ (E + p_t) v_y \end{Bmatrix}$$

$$+ \frac{\partial}{\partial z}\begin{Bmatrix} \rho v_z \\ \rho v_z v_x \\ \rho v_z v_y \\ \rho v_z^2 + p_t \\ (E + p_t) v_z \end{Bmatrix}$$

$$L(U) = \frac{\partial}{\partial x}\begin{Bmatrix} 0 \\ \tau_{xx} \\ \tau_{yx} \\ \tau_{zx} \\ v_x \tau_{xx} + v_y \tau_{yx} + v_z \tau_{zx} \end{Bmatrix}$$

$$+ \frac{\partial}{\partial y}\begin{Bmatrix} 0 \\ \tau_{xy} \\ \tau_{yy} \\ \tau_{zy} \\ v_x \tau_{xy} + v_y \tau_{yy} + v_z \tau_{zy} \end{Bmatrix}$$

$$+ \frac{\partial}{\partial z}\begin{Bmatrix} 0 \\ \tau_{xz} \\ \tau_{yz} \\ \tau_{zz} \\ v_x \tau_{xz} + v_y \tau_{yz} + v_z \tau_{zz} \end{Bmatrix}$$

$$\tau_{xy} = \tau_{yx} = \mu \left\{ \frac{\partial v_y}{\partial x} + \frac{\partial v_x}{\partial y} \right\}$$

$$\tau_{yz} = \tau_{zy} = \mu \left\{ \frac{\partial v_z}{\partial y} + \frac{\partial v_y}{\partial z} \right\}$$

$$\tau_{zx} = \tau_{xz} = \mu \left\{ \frac{\partial v_x}{\partial z} + \frac{\partial v_z}{\partial x} \right\}$$

$$\tau_{xx} = 2\mu \left\{ \frac{\partial v_x}{\partial x} - \frac{1}{3} \left(\frac{\partial v_x}{\partial x} + \frac{\partial v_y}{\partial y} + \frac{\partial v_z}{\partial z} \right) \right\}$$

$$\tau_{yy} = 2\mu \left\{ \frac{\partial v_y}{\partial y} - \frac{1}{3} \left(\frac{\partial v_x}{\partial x} + \frac{\partial v_y}{\partial y} + \frac{\partial v_z}{\partial z} \right) \right\}$$

$$\tau_{zz} = 2\mu \left\{ \frac{\partial v_z}{\partial z} - \frac{1}{3} \left(\frac{\partial v_x}{\partial x} + \frac{\partial v_y}{\partial y} + \frac{\partial v_z}{\partial z} \right) \right\}$$