$$J = \frac{\partial u_i}{\partial x}\frac{\partial v_i}{\partial y}\frac{\partial w_i}{\partial z} + \frac{\partial u_i}{\partial y}\frac{\partial v_i}{\partial z}\frac{\partial w_i}{\partial x} + \frac{\partial u_i}{\partial z}\frac{\partial v_i}{\partial x}\frac{\partial w_i}{\partial y} - \frac{\partial u_i}{\partial z}\frac{\partial v_i}{\partial y}\frac{\partial w_i}{\partial x} - \frac{\partial u_i}{\partial x}\frac{\partial v_i}{\partial z}\frac{\partial w_i}{\partial y} - \frac{\partial u_i}{\partial y}\frac{\partial v_i}{\partial x}\frac{\partial w_i}{\partial z}$$

$$x_{i+1} = x_i - \frac{\left[u_i\left(\frac{\partial v_i}{\partial y}\frac{\partial w_i}{\partial z} - \frac{\partial w_i}{\partial y}\frac{\partial v_i}{\partial z}\right) + v_i\left(\frac{\partial w_i}{\partial y}\frac{\partial u_i}{\partial z} - \frac{\partial u_i}{\partial y}\frac{\partial w_i}{\partial z}\right) + w_i\left(\frac{\partial u_i}{\partial y}\frac{\partial v_i}{\partial z} - \frac{\partial v_i}{\partial y}\frac{\partial u_i}{\partial z}\right)\right]}{J}$$

$$y_{i+1} = y_i - \frac{\left[u_i\left(\frac{\partial w_i}{\partial x}\frac{\partial v_i}{\partial z} - \frac{\partial v_i}{\partial x}\frac{\partial w_i}{\partial z}\right) + v_i\left(\frac{\partial u_i}{\partial x}\frac{\partial w_i}{\partial z} - \frac{\partial w_i}{\partial x}\frac{\partial u_i}{\partial z}\right) + w_i\left(\frac{\partial v_i}{\partial x}\frac{\partial u_i}{\partial z} - \frac{\partial u_i}{\partial x}\frac{\partial v_i}{\partial z}\right)\right]}{J}$$

$$z_{i+1} = z_i - \frac{\left[u_i\left(\frac{\partial v_i}{\partial x}\frac{\partial w_i}{\partial y} - \frac{\partial w_i}{\partial x}\frac{\partial v_i}{\partial y}\right) + v_i\left(\frac{\partial w_i}{\partial x}\frac{\partial u_i}{\partial y} - \frac{\partial u_i}{\partial x}\frac{\partial w_i}{\partial y}\right) + w_i\left(\frac{\partial u_i}{\partial x}\frac{\partial v_i}{\partial y} - \frac{\partial v_i}{\partial x}\frac{\partial u_i}{\partial y}\right)\right]}{J}$$