$$i\hbar\frac{\partial\psi}{\partial t} = -\frac{\hbar^2}{2m}\nabla^2\psi + V\psi$$

$$i\hbar\frac{\partial\psi}{\partial t} = -\frac{\hbar^2}{2m}\left(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}\right)\psi + V\psi$$

$$x = L_x x' = Lx' \qquad y = L_y y' = \alpha L_x y' = \alpha L y'$$

$$i\hbar\frac{\partial\psi}{\partial t} = -\frac{\hbar^2}{2m}\left(\frac{\partial^2}{L^2\partial x'^2} + \frac{\partial^2}{\alpha^2 L^2\partial y'^2}\right)\psi + V\psi$$

$$t = \frac{mL^2}{\hbar}\tau$$

$$i\hbar\frac{\partial\psi}{\frac{mL^2}{\hbar}\partial\tau} = -\frac{\hbar^2}{2mL^2}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi + V\psi$$

$$i\hbar\frac{\partial\psi}{\partial\tau} = \left[-\frac{\hbar^2}{2mL^2}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi + V\psi\right]\frac{mL^2}{\hbar}$$

$$i\hbar\frac{\partial\psi}{\partial\tau} = -\frac{\hbar}{2}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi + \frac{mL^2}{\hbar}V\psi$$

$$i\frac{\partial\psi}{\partial\tau} = -\frac{1}{2}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi + \frac{mL^2}{\hbar^2}V\psi$$

$$V' = \frac{mL^2}{\hbar^2}V$$

$$i\frac{\partial\psi}{\partial\tau} = -\frac{1}{2}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi + V'\psi$$

$$\frac{\partial\psi}{\partial\tau} = -\frac{1}{2i}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi + \frac{1}{i}V'\psi$$

$$\frac{\partial\psi}{\partial\tau} = \frac{i}{2}\left(\frac{\partial^2}{\partial x'^2} + \frac{\partial^2}{\alpha^2\partial y'^2}\right)\psi - iV'\psi$$