



$$\left\{ \begin{array}{l} t^2 + x^2 = 1 \\ x = \frac{v}{c}t \end{array} \right. \quad (1)$$

$$\left\{ \begin{array}{l} t = t_D \\ x = x_D \end{array} \right. \quad (2)$$

$$\left\{ \begin{array}{l} t = t_D \\ x = x_D \end{array} \right. \quad (3)$$

$$\left\{ \begin{array}{l} t = t_D \\ x = x_D \end{array} \right. \quad (4)$$

$$\left\{ \begin{array}{l} t_D = \frac{1}{\sqrt{1 + \frac{v^2}{c^2}}} \\ OE^2 = \frac{t_E^2}{t_D^2} = \left(1 + \frac{v^2}{c^2}\right) t_E^2 = t_E^2 + x_E^2 \end{array} \right. \quad (5)$$

$$\left\{ \begin{array}{l} t_D = \frac{1}{\sqrt{1 + \frac{v^2}{c^2}}} \\ OE^2 = \frac{t_E^2}{t_D^2} = \left(1 + \frac{v^2}{c^2}\right) t_E^2 = t_E^2 + x_E^2 \end{array} \right. \quad (6)$$

$$\boxed{OE^2 = t_E^2 + x_E^2} \quad (7)$$