$$y(x_0 + 1) = \beta_0 + \beta_1 \times (x_0 + 1) \tag{1}$$

$$\tag{2}$$

$$= \beta_0 + \beta_1 x_0 + \beta_1 \tag{3}$$

$$\tag{4}$$

$$= y(x_0) + \beta_1 \tag{5}$$

$$\tag{6}$$

$$\implies \beta_1 = y(x_0 + 1) - y(x_0) \tag{7}$$