CH04 Q01

(4.2) $$p(X) = \frac{e^{\beta_0+\beta_1 X}}{1+e^{\beta_0+\beta_1 X}}$$

(4.3) $$\frac{p(X)}{1-p(X)} = e^{\beta_0+\beta_1 X}$$

$$p(X) = \frac{e^{\beta_0+\beta_1 X}}{1+e^{\beta_0+\beta_1 X}}$$

$$\Rightarrow \quad p(X)\left[1+e^{\beta_0+\beta_1 X}\right] = e^{\beta_0+\beta_1 X}$$

$$\Rightarrow \quad p(X) + p(X)e^{\beta_0+\beta_1 X} = e^{\beta_0+\beta_1 X}$$

$$\Rightarrow \quad p(X) = \left[1-p(X)\right]e^{\beta_0+\beta_1 X}$$

$$\Rightarrow \quad \frac{p(X)}{1-p(X)} = e^{\beta_0+\beta_1 X} \quad (4.3) \quad \#$$