- Prove

  $$f(x,y) = g(x)h(y) \Longrightarrow ff_{xy} = f_x f_y$$

  Proof: (We have proved in the course)

  $$ff_{xy} = ghg_x h_y$$

  $$f_x f_y = g_x hgh_y$$

- Prove

  $$ff_{xy} = f_x f_y \Longrightarrow f(x,y) = g(x)h(y)$$

  Proof: (This is the homework)