Question 1.1

$$z_0 = y_k$$
$$z_1 = f_{0,\theta_0}(y_k)$$
$$\hat{x}_k = z_2 = f_{1,\theta_1}(z_1)$$

Input gradients

$$A_0 = \frac{\partial f_{0,\theta_0}(z_0)}{\partial z_0}$$

Parameter gradients

$$B_0 = \frac{\partial f_{0,\theta_0}(z_0)}{\partial \theta_0}$$

$$A_1 = \frac{\partial f_{1,\theta_1}(z_1)}{\partial z_1}$$

$$B_1 = \frac{\partial f_{1,\theta_1}(z_1)}{\partial \theta_1}$$