



$$\frac{\partial L}{\partial z_2} = \frac{\partial L}{\partial a_2} \cdot \frac{\partial a_2}{\partial z_2} = -(4 - a_2) \sigma'(z_2)$$

$$\frac{\partial L}{\partial z_1'} = \frac{\partial L}{\partial z_2} \cdot \frac{\partial z_2}{\partial a_1'} \cdot \frac{\partial a_1'}{\partial z_1'} =$$

$$\left(\frac{\partial L}{\partial z_2} \right) \cdot w_1^2 \cdot \sigma'(z_1')$$

$$\frac{\partial L}{\partial w_{1,1}^1} = \frac{\partial L}{\partial z_1'} \cdot \frac{\partial z_1'}{\partial w_{1,1}^1}$$

$$= \left(\frac{\partial L}{\partial z_1'} \right) \cdot X_1$$