$$\delta_1^{(L)} = \frac{\partial loss}{\partial z_1^{(L)}} = \sum_{k=1}^{d_{L+1}} \frac{\partial loss}{\partial z_k^{(L+1)}} \frac{\partial z_k^{(L+1)}}{\partial x_1^{(L)}} \frac{\partial x_1^{(L)}}{\partial z_1^{(L)}}$$

$$= \left( \sum_{k=1}^{d_{L+1}} \delta_k^{(L+1)} w_{1,k}^{(L+1)} \right) f'(z_1^{(L)})$$