Error $(E) = (T - \text{out}_y)^2$.

$$\frac{\partial E}{\partial w_{11}^2} = \frac{\partial E}{\partial \text{out}_y} \times \frac{\partial \text{out}_y}{\partial y} \times \frac{\partial y}{\partial w_{11}^2}$$

$$= -2(T - \text{out}_y) \times \sigma(y)(1 - \sigma(y)) \times \text{out}_{H_1} \times$$

$$\frac{\partial E}{\partial w_{12}^2} = \frac{\partial E}{\partial \text{out}_y} \times \frac{\partial \text{out}_y}{\partial y} \times \frac{\partial y}{\partial w_{12}^2}$$

$$= -2(T - \text{out}_y) \times \sigma(y)(1 - \sigma(y)) \times \text{out}_{H_2}$$