

Problem 1:

eqs

$$\Delta C \approx \frac{\partial C}{\partial a_1^4} * \frac{\partial a_1^4}{\partial a_3^3} * \frac{\partial a_3^3}{\partial a_2^2} * \frac{\partial a_2^2}{\partial w_{21}^2} * \Delta w_{21}^2 \quad (1)$$

$$a^l = \sigma(w^l a^{l-1}) \quad (2)$$

$$\frac{\partial a^l}{\partial a^{l-1}} = (w^l a^{l-1}) * (1 - (w^l a^{l-1})) \quad (3)$$

$$\Delta C \approx 1 * (w_1^4 a_3^3) * (1 - (w_1^4 a_3^3)) * (w_3^3 a_2^2) * (1 - (w_3^3 a_2^2)) * a_2^2 * (1 - a_2^2) * \Delta w_{21}^2 \quad (4)$$