1. $$\frac{\partial f(x_i)}{\partial x} = \frac{f(x_0+h) - f(x_0-h)}{2h}$$

$$f(x+h) = f(x) + f'(x)h + \frac{f''(x)h^2}{2}$$

$$f(x-h) = f(x) - f'(x)h + \frac{f''(x)h^2}{2}$$

$$f(x+h) + f(x-h) = 2f(x) + \cancel{f'(x)} - \cancel{f'(x)} + f''\frac{h^2}{2}$$

$$f'' = \frac{f(x+2h) - 2f(x) + f(x-2h)}{4h^2}$$

2. $$f' = \frac{f(x+h) - f(x-h)}{2h}$$

$$f' = \frac{1}{\sqrt{1+e^{(10x-5)}}} - \frac{1}{\sqrt{1+e^{(-10x+5)}}}$$