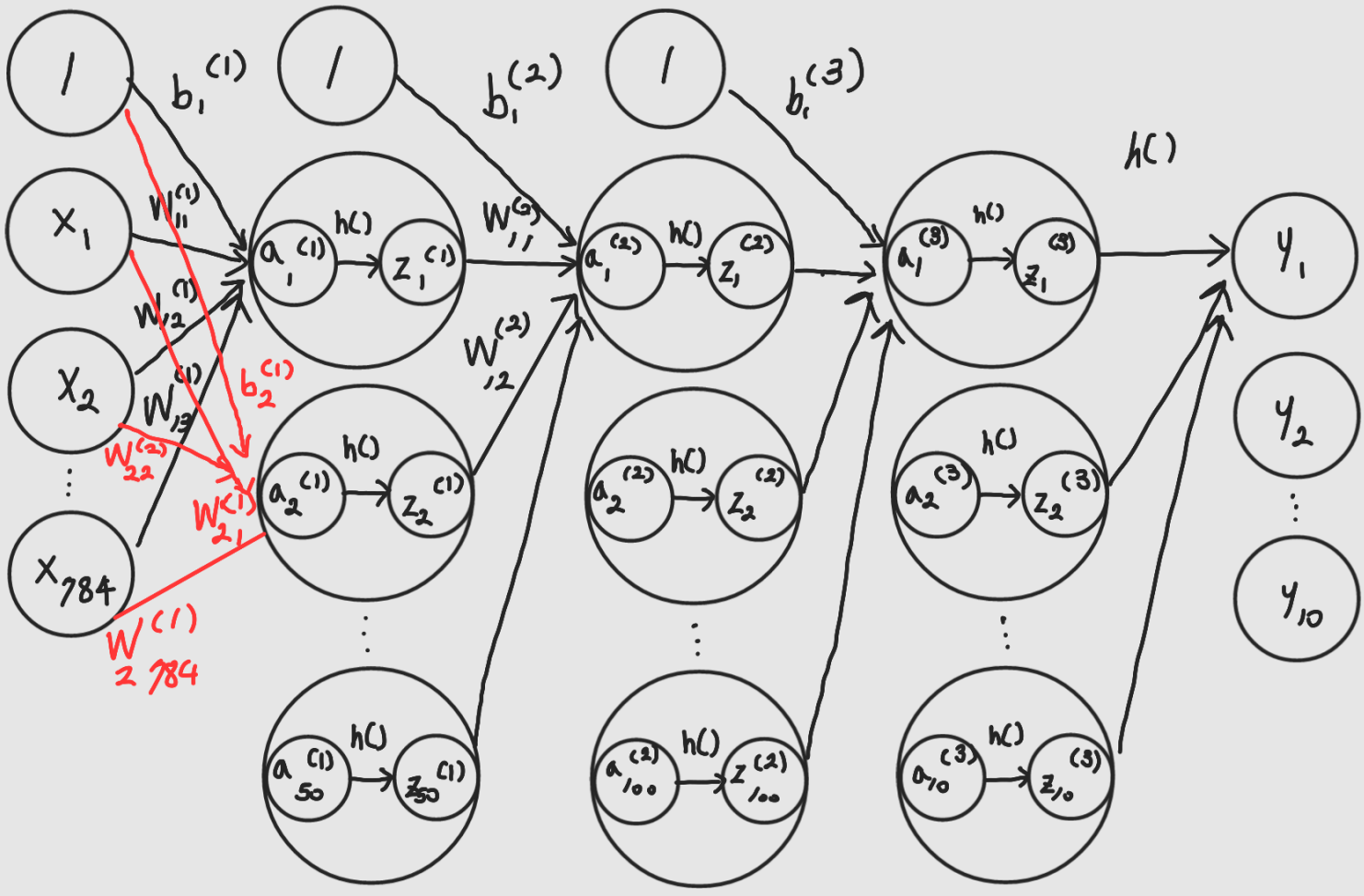
$W^{(1)}_{1,2}$ → 앞으로 갈 층의 가중치 크기

[2 → 출발층 에서의 순서
1 → 도착층 에서의 순서

× W1 W2 W3 Y
784 784X50 50X100 100X10 10



$$X = \underset{1\times 784}{\begin{bmatrix} x_1 \cdots x_{784} \end{bmatrix}} \quad W_1 = \underset{784\times 50}{\begin{bmatrix} w_{11} & w_{21} \cdots w_{50\,1} \\ w_{12} & \ddots \\ \vdots & \ddots \\ w_{1\,784} & w_{50\,784} \end{bmatrix}} \quad B_1 = \underset{1\times 50}{\begin{bmatrix} b_1 \\ \vdots \\ b_{50} \end{bmatrix}}$$

$$A_1 = XW_1 + B_1$$

$$Z_1 = h(A_1)$$

$$Z_1 = \underset{1\times 50}{\begin{bmatrix} z_1 \cdots z_{50} \end{bmatrix}} \quad W_2 \underset{50\times 100}{\begin{bmatrix} w_{11} & w_{21} \cdots w_{100\,1} \\ w_{12} & \ddots \\ \vdots & \\ w_{1\,50} & w_{100\,50} \end{bmatrix}} \quad B_2 = \underset{1\times 100}{\begin{bmatrix} b_1 \\ \vdots \\ b_{100} \end{bmatrix}}$$

$$\underset{1\times 100}{A_2} = Z_1 W_2 + B_2$$

$$Z_2 = h(A_2)$$

$$\underset{1\times 100}{Z_2} = \begin{bmatrix} z_1 \cdots z_{100} \end{bmatrix} \quad W_3 = \underset{100\times 10}{\begin{bmatrix} w_{11} & w_{21} \cdots w_{10\,1} \\ w_{12} & \ddots \\ \vdots & \\ w_{1\,100} & w_{10\,100} \end{bmatrix}} \quad B_3 = \underset{1\times 10}{\begin{bmatrix} b_1 \\ \vdots \\ b_{10} \end{bmatrix}}$$

$$\underset{1\times 10}{A_3} = Z_2 W_3 + B_2$$

$$\underset{1\times 10}{y} = h(A_3)$$