

$$\text{sign}(x) = \begin{cases} 1 & x \geq 0 \\ -1 & x < 0 \end{cases}$$

$$a = \frac{w_1}{0.01} x_1$$

	$x_1$	$x_2$	$x_3$	$w_1$	$w_2$	$w_3$	$b$	$Z$	$y$	Actual
$E = -2$	0.2	0.5	0.7	-0.5	0.1	0.4	0.2	0.43	1	1
$E = -2$	0.1	0.3	0.6	-0.5	0.1	0.4	0.2	0.42	1	-1
$E = -2$	0.4	0.8	0.2	-0.502	0.094	0.388	0.18	0.132	1	1
$E = -2$	0.6	0.4	0.9	-0.502	0.094	0.388	0.18	0.2556	1	-1

$$w_1' = w_1 + \Delta w_1 = -0.5 + a E x_1 = -0.502$$

$$w_2' = w_2 + \Delta w_2 = 0.094 \quad b = 0.18$$

$$w_3' = 0.388$$

$$w_1'' = w_1' + \Delta w_1' = -0.514$$

$$w_2'' = w_2' + \Delta w_2' = 0.086$$

$$w_3'' = w_3' + \Delta w_3' = 0.37$$

$$b = 0.16$$

$$\text{acc} = \frac{TP + TN}{TP + FP + TN + FN} = \frac{2 + 0}{2 + 2 + 0 + 0} = \frac{1}{2} = 50\%$$



$x_1$	$x_2$	$x_3$	$w_1$	$w_2$	$w_3$	$b$	$z$	$y$	label
0.2	0.5	0.7	-0.514	0.086	0.37	0.16	0.3592	1	1
0.1	0.3	0.6	-0.514	0.086	0.37	0.16	0.3564	1	-1
0.4	0.8	0.2	-0.516	0.08	0.358	0.14	0.6692	1	1
0.6	0.4	0.9	-0.516	0.08	0.358	0.14	0.1846	1	-1

$$w_1^1 = w_1 + \Delta w_1 = -0.514 + (-2 \times 0.01 \times 0.1) = -0.516$$

$$w_2^1 = w_2 + \Delta w_2 = 0.08$$

$$w_3^1 = 0.358 \quad b = 0.14$$

$$w_1^{11} = -0.516 + (-2 \times 0.01 \times 0.6) = -0.528$$

$$w_2^{11} = 0.072 \quad b = 0.12$$

$$w_3^{11} = 0.34$$

$$\begin{aligned}
 \text{acc} &= \frac{TP + TN}{TP + FP + TN + FN} = \frac{2 + 0}{2 + 2 + 0 + 0} \\
 &= \frac{2}{4} \\
 &= \frac{1}{2} \\
 &= 50\%
 \end{aligned}$$