1. (a)

h1 = g (w_h1x1 × x1 + w_h1x2 × x2 + w_h1b)
= g (2.5 × 0 + 1 × 1 + 1.5)
= g (2.5)
= 1 / (1 + e^(-2.5))
= 0.9241

h2 = g (w_h2x1 × x1 + w_h2x2 × x2 + w_h2b)
= g (-1.5 × 0 + (-3) × 1 + 2)
= g (-1)
= 1 / (1 + e^(1))
= 0.2689

output y = g (w_yh1 × h1 + w_yh2 × h2 + w_yb)
= g (1 × 0.9241 + 0.5 × 0.2689 + (-1))
= g (0.0586)
= 1 / (1 + e^(-0.0586))
= 0.5146

(b)

Δw_yh1 = αh1 × (y - O) × O × (1 - O)
= 0.1 × 0.9241 × (1- 0.5146) × 0.5146 × (1- 0.5146)
= 0.0112
update : w_yh1 = w_yh1 + Δw_yh1
= 1 + 0.0112
= 1.0112

Δw_yh2 = αh2 × (y - O) × O × (1 - O)
= 0.1 × 0.2689 × (1- 0.5146) × 0.5146 × (1- 0.5146)
= 0.0033
update : w_yh2 = w_yh2 + Δw_yh2
= 0.5 + 0.0033
= 0.5003

Δw_yb = αb × (y - O) × O × (1 - O)
= 0.1 × 1 × (1- 0.5146) × 0.5146 × (1- 0.5146)
= 0.0121
update : w_yb = w_yb + Δw_yb
= -1 + 0.0121
= -0.9879

$\Delta w\_h1x1 = \alpha \times h1x1 \times (1 - h1) \times w\_h1y \times (y - O) \times O \times (1 - O)$
$= 0.1 \times 0 \times 0.9241 \times (1 - 0.9241) \times 1 \times (1 - 0.5146) \times 0.5146 \times (1 - 0.5146)$
$= 0$
update : $w\_h1x1 = w\_h1x1 + \Delta w\_h1x1$
$= 2.5 + 0$
$= 2.5$

$\Delta w\_h1x2 = \alpha \times h1x2 \times (1 - h1) \times w\_h1y \times (y - O) \times O \times (1 - O)$
$= 0.1 \times 1 \times 0.9241 \times (1 - 0.9241) \times 1 \times (1 - 0.5146) \times 0.5146 \times (1 - 0.5146)$
$= 0.0112$
update : $w\_h1x2 = w\_h1x2 + \Delta w\_h1x2$
$= 1 + 0.0008$
$= 1.0008$

$\Delta w\_h1b = \alpha \times h1b \times (1 - h1) \times w\_h1y \times (y - O) \times O \times (1 - O)$
$= 0.1 \times 1 \times 0.9241 \times (1 - 0.9241) \times 1 \times (1 - 0.5146) \times 0.5146 \times (1 - 0.5146)$
$= 0.0112$
update : $w\_h1b = w\_h1b + \Delta w\_h1b$
$= 1.5 + 0.0008$
$= 1.5008$

$\Delta w\_h2x1 = \alpha \times h2x1 \times (1 - h2) \times w\_h2y \times (y - O) \times O \times (1 - O)$
$= 0.1 \times 0 \times 0.2689 \times (1 - 0.2689) \times 0.5 \times (1 - 0.5146) \times 0.5146 \times (1 - 0.5146)$
$= 0$
update : $w\_h2x1 = w\_h2x1 + \Delta w\_h2x1$
$= -1.5 + 0$
$= -1.5$

$\Delta w\_h2x2 = \alpha \times h2x1 \times (1 - h2) \times w\_h2y \times (y - O) \times O \times (1 - O)$
$= 0.1 \times 1 \times 0.2689 \times (1 - 0.2689) \times 0.5 \times (1 - 0.5146) \times 0.5146 \times (1 - 0.5146)$
$= 0.0012$
update : $w\_h2x2 = w\_h2x2 + \Delta w\_h2x2$
$= -3 + 0.0012$
$= -2.9988$

$\Delta w\_h2b = \alpha \times h2b \times (1 - h2) \times w\_h2y \times (y - O) \times O \times (1 - O)$
$= 0.1 \times 1 \times 0.2689 \times (1 - 0.2689) \times 0.5 \times (1 - 0.5146) \times 0.5146 \times (1 - 0.5146)$
$= 0.0012$
update : $w\_h2b = w\_h2b + \Delta w\_h2b$
$= 2 + 0.0012$
$= 2.0012$