AI workshop 5.

Task 1

$w_1 = 0.5 \quad w_2 = -0.2 \quad \theta = 0.1$

$x = [0, 1]^T \quad d = 1.$

$I = \begin{bmatrix} 0 \\ 1 \\ -1 \end{bmatrix} \quad \vec{w} = \begin{bmatrix} 0.5 \\ -0.2 \\ 0.1 \end{bmatrix}$

$net = (0.5 \times 0) + (-0.2 \times 1) + (-1 \times 0.1) = 0 + -0.2 + -0.1$

$= -0.3 \quad \therefore f(net) = 0$

The perceptron gives the correct answer.

Task 2

$\Delta w_i \leftarrow \Delta w_i + n(d - o) I_i$

$w_i \leftarrow w_i + \Delta w_i$

$\Delta w_1 = 0 + 0.2(1 - 0)0 = 0 \qquad w_1 = 0 + 0.5 = 0.5$

$\Delta w_2 = 0 + 0.2(1 - 0)1 = 0.2 \qquad w_2 = -0.2 + 0.2 = 0$

$\Delta w_3 = 0 + 0.5(1 - 0)-1 = -0.5 \qquad w_3 = 0.2 + -0.5 = -0.3$

$\theta = -0.3$

Task 3

$net = (0 \times 0.5) + (1 \times 0) + (-1 \times -0.3) = 0 + 0 + 0.3$

$= 0.3 \quad \therefore f(net) = 1$

The perceptron gives the correct answer.