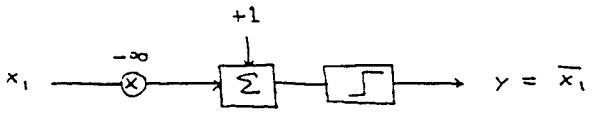
Perceptrons—

23 Mar 1990 McCulloch Pitts — Logic gates

Neil E Cotter

NOT (or inverter) gates



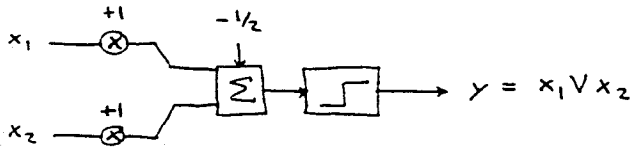
$x_1 = 0$ $\quad 0 \cdot -\infty + 1 = 1 > 0 \Rightarrow y = 1$ (here 0 · -

$x_1 = 1$ $\quad 1 \cdot -\infty + 1 = -\infty < 0 \Rightarrow y = 0$

Truth Table

x_1	y
0	1
1	0

OR gate

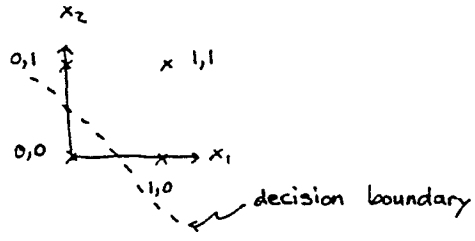


$x_1 = 1$ or $x_2 = 1$ $\quad 1 \cdot 1 - 1/2 = 1/2 > 0 \Rightarrow y = 1$

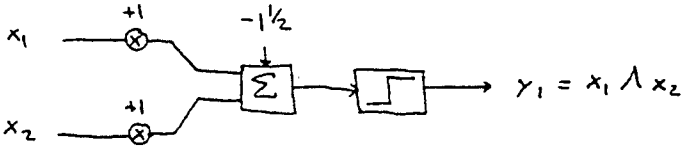
x_1 and $x_2 = 0$ $\quad 0 \cdot 1 + 0 \cdot 1 - 1/2 = -1/2 < 0 \Rightarrow y = 0$

Truth Table

x_1	x_2	y
0	0	0
0	1	1
1	0	1
1	1	1



AND gate



Truth Table

x_1	x_2	y
0	0	0
0	1	0
1	0	0
1	1	1