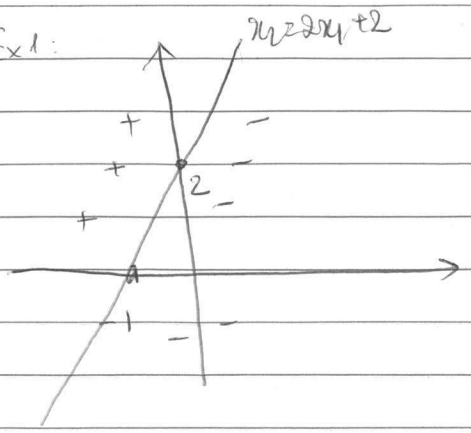
Ungraded Exercise on Neural Network

Ex 1:



$x_2 \geq 2x_1 + 2$

$h_w(x) = w_0 + w_1 x_1 + w_2 x_2 \geq 0$

$w_0 = -2$
$w_1 = -2$
$w_2 = 1$

e.g $x_1 = -2 \quad x_2 = 2 \rightarrow +$
$x_1 = 1 \quad x_2 = 0 \rightarrow -$
$x_1 = -1 \quad x_2 = 1 \rightarrow +$
$x_1 = -3 \quad x_2 = 2 \rightarrow +$

Ex 2: a) a and NOT B

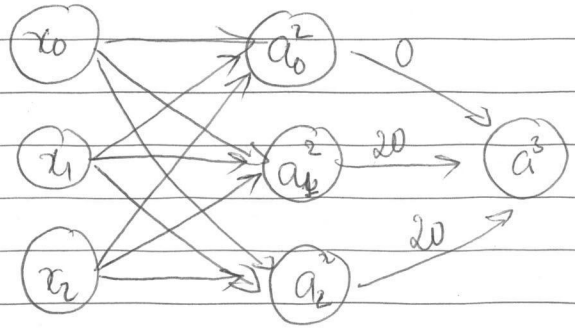
$w_0 = -20$
$w_1 = 30$
$w_2 = -30$

x_1	x_2	$1 x_2$	out	$g(z)$
1	1	0	0	$g(-20)$
1	0	1	1	$g(10)$
0	1	0	0	$g(-50)$
0	0	1	0	$g(-20)$

b) A XOR B
= (A AND NOT B) OR (NOT A AND B)
$\rightarrow a_1^2$ $\rightarrow a_2^2$

$w_0 = -20$
$w_1 = -30$
$w_2 = 30$

x_1	x_2	out
0	1	1
0	0	0
1	0	0
1	1	0



x_1	x_2	a_1^2	a_2^2	(OR) $h_\theta(x)$
0	1	0	1	1
0	0	0	0	0
1	1	0	0	0
1	0	1	0	1

$w_0 = 0$
$w_1 = 20$
$w_2 = 20$