**Examples and Intuitions II**

The Θ(1) matrices for AND, NOR, and OR are:

|  |
| --- |
| AND:  Θ(1) = [−30 20 20]  NOR:  Θ(1) = [10 −20 −20]  OR:  Θ(1) = [−10 20 20] |

We can combine these to get the XNOR logical operator (which gives 1 if x1 and x2 are both 0 or both 1).



For the transition between the first and second layer, we'll use a Θ(1) matrix that combines the values for AND and NOR:



For the transition between the second and third layer, we'll use a Θ(2) matrix that uses the value for OR:



Let's write out the values for all our nodes:



And there we have the XNOR operator using a hidden layer with two nodes! The following summarizes the above algorithm:

