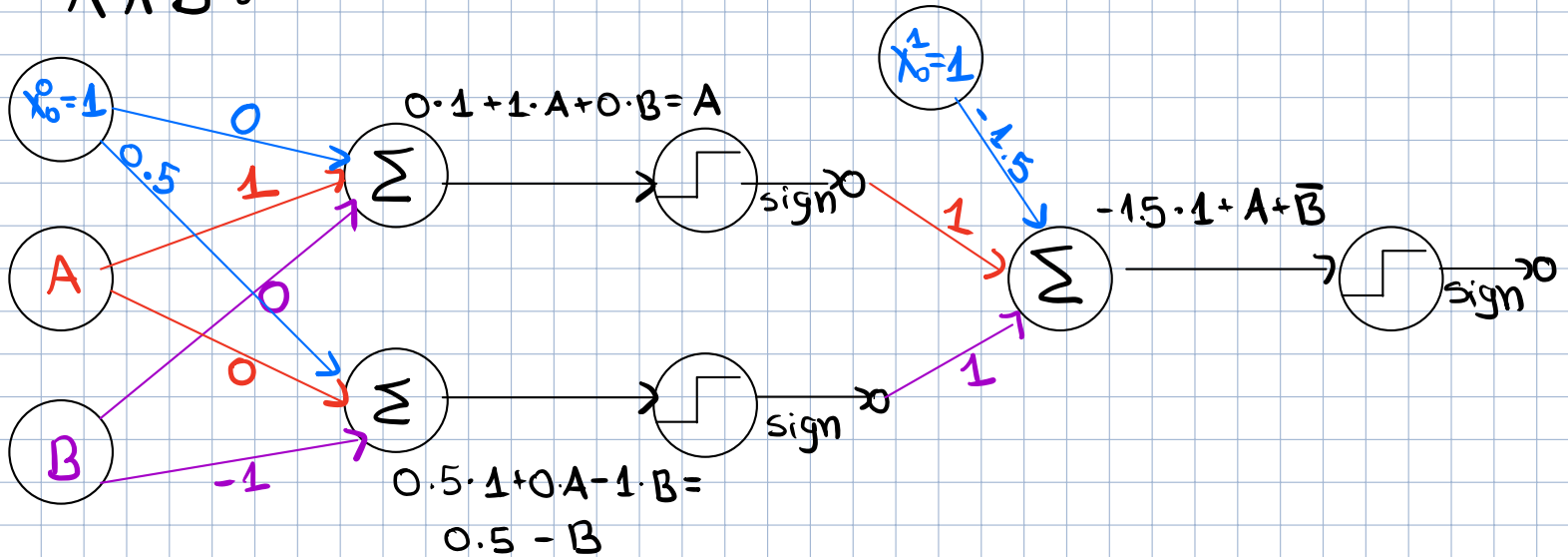


Lecture 7:

Give Perceptron-based multi-layer networks with hard thresholds and relative weights (without using learning) that implement simple Boolean functions such as: A and (not B), A xor B, ...

$A \wedge \bar{B}$:



$A \oplus B$:

$$A \oplus B = A\bar{B} + \bar{A}B = A\bar{B} + \bar{A}B + \overbrace{A\bar{A}}^0 + \overbrace{B\bar{B}}^0 = A(\bar{B} + \bar{A}) + B(\bar{A} + \bar{B}) = (A+B)(\bar{A} + \bar{B}) = (A+B)(\overline{AB}) = (A \vee B) \wedge (\overline{A \wedge B})$$

