CS 232 Computer Organization

Circuit Equivalence

- Implement a boolean function solely with NAND gates or solely with NOR gates
- May not be the minimum-gate implementation, but it has the advantage of regularity, which can simplify the manufacturing process.
- NOT, AND, and OR gates can be constructed by solely NAND gates or solely NOR gates
  - NOT $\rightarrow$ NAND: $A' = (AA)'$
  - NOT $\rightarrow$ NOR: $A' = (A + A)'$
  - AND $\rightarrow$ NAND: $AB = ((AB)'(AB))'$
  - AND $\rightarrow$ NOR: $AB = ((A+A)' + (B+B))'$