## Adders

Full-adder cell (FA) revisited:


## Adders (cont.)

1. Subtractors: $A-B=A+(-B)$

How do we form -B?
a) complement $B \quad$ b) add 1

2. Ripple Adder


Ripple adder is inherently slow because, in general s7 must wait for c7 which must wait for c6 ...

## $T$ proportional to $n$, Cost proportional to $n$

How do we make it faster, perhaps with more cost?
3. Carry Select Adder


## 16-bit Carry Select Adder



