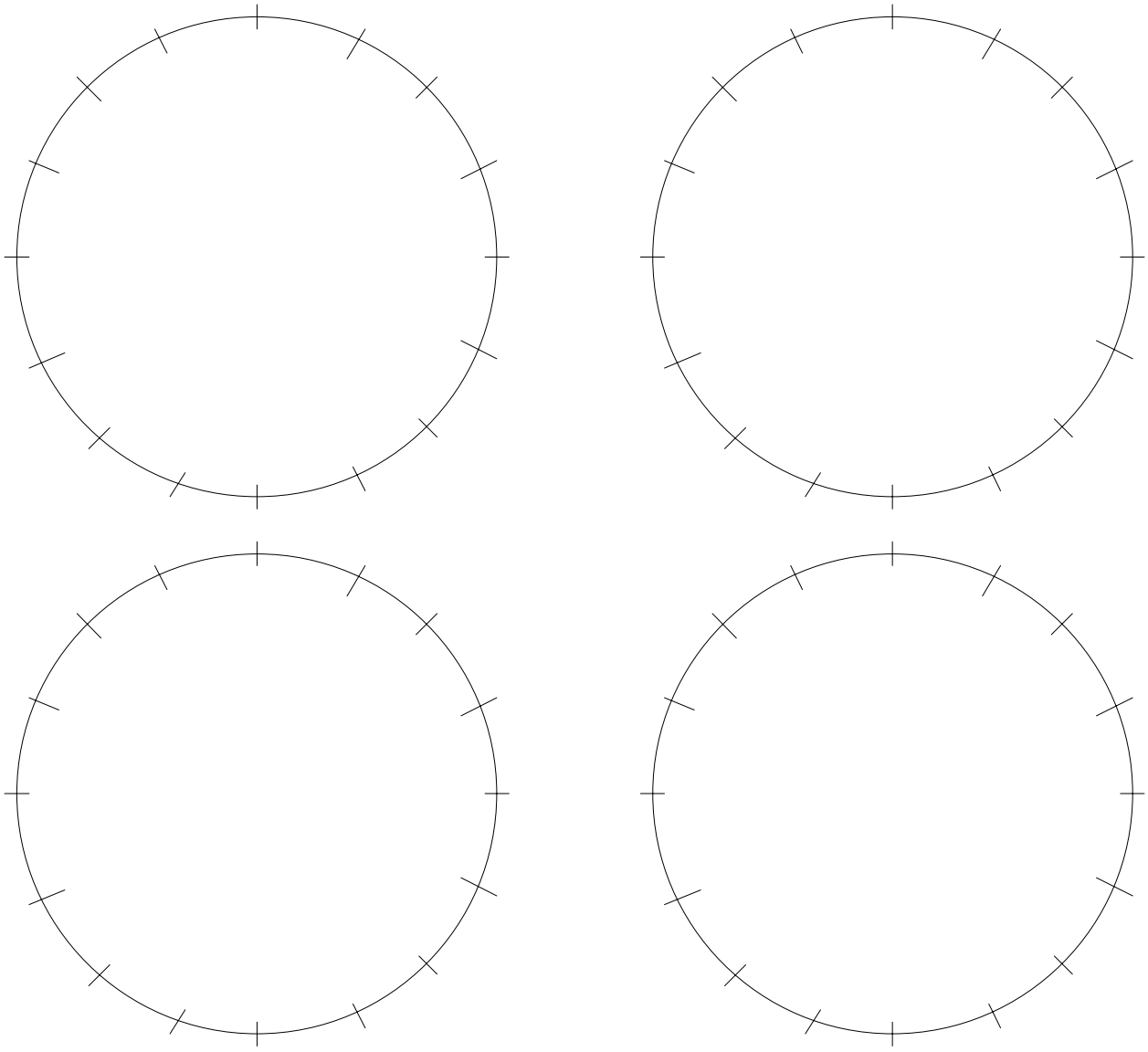

Operations:
1's complement: toggle the bits
2's complement: (toggle the bits and add 1) == (1's complement and move CW by 1)
2's complement twice: back to original bits
Notations:
N bits
unsigned: 0 to (2^N)-1
2's complement or *signed*: -(2^(N-1)) to 2^(N-1)-1
Try the following:
1. Draw bit patterns (0 at top, proceeding clockwise) and connect 1's complements
2. Label the 2's complement values (0 at top, + to right, - to left, maximum magnitude - at bottom)
3. 3 + -5 with 4 bits
4. -5 + -5 with 4 bits (does this work?)