

Zonal Informatics Olympiad, 2021

Solutions

- Number of good k -bounded lists of length n
 - $\text{good}(7, 1) = 65$
 - $\text{good}(7, 3) = 15163$
 - $\text{good}(20, 1) = 97229$
- Minimum number of signs to be flipped to have all prefix sums non-negative
 - $[3, -2, 3, -1, -2, -2, -4]$ — 2 sign flips
 - $[-15, -12, -10, -13, -2, -3, -17, -19, -5, -9]$ — 4 sign flips
 - $[-12, -2, -16, -19, -9, -3, -7, -11, -17, -3, -15, -10, -10, -15, -8]$ — 5 sign flips
- Find the n^{th} solid integer
 - $n = 100$ — 121
 - $n = 2000$ — 2662
 - $n = 100000$ — 162151
- Convert x to y using k in the minimum number of steps
 - $\text{convert}(3, 10, 2) = 3$
 - $\text{convert}(4, 92, 3) = 7$
 - $\text{convert}(11, 104250, 2) = 24$

Marking

The question paper carries 80 marks, broken up into four questions of 20 marks each. Each question has three parts. *If you solve all three parts correctly, you get 20 marks for that question.* Otherwise, you get 5 marks for each part that you solve correctly.

Qualifying cutoff

- Std 12: 45
- Std 11: 40
- Std 10: 35
- Std 9 or below: 30