Задача

Mr. John is a central New Jersey real estate salesman. He claims that the median selling price of houses in the area is about $ 100,000. To check this claim, you randomly select 10 houses that were recently sold in this area and record the following prices (in thousands of dollars).

$data = 120, 115, 100, 113, 103, 97, 90, 111, 95, 88$

Using the sign test, determine whether the salesman's claim is reasonable. (Test at the .05 level of significance.)

Решение

$H_0 : median = 100, H_1 : median \neq 100$

$signs = +, +, 0, +, +, -, -, +, -, -$

$n = 9$

$cnt_+ \sim Bin(9, 0.5)$ в предположении истинности нулевой гипотезы

95% доверительный интервал $= (q_{Bin(9,0.5)}(0.025); q_{Bin(9,0.5)}(0.975)) = (2, 7)$

$cnt_+ = 5$ попадает в доверительный интервал $\Rightarrow$ нулевая гипотеза не отвергается