

Concrete Mathematics

Homework Set 6

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Problem 1 Find the closest fractional approximation of $\sqrt{3}$ with the denominator ≤ 100 . Determine the largest integer k such that the error is bounded above by 10^{-k} .

Problem 2 In the course of Concrete Math, the average score of the mid-term exam is 44.308 (after rounding up or down). Suppose that each student got an integral score. Prove that there must be at least 13 students attended this examination. (Hint: The actual average score lies in $[44.3075, 44.3085]$. Try to find a fraction with the smallest denominator that is within this range.)

Problem 3 Find the largest integer within 10000 such that the remainder is 2 after divided by 3, 3 after divided by 5, and 1 after divided by 7.