

**MAT 331 Fall 2017, New Practice Quiz 1,
Real Quiz 1 on Tuesday Sept 12, 2017 (30 minutes)**

Name	ID	Score
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EVERY ANSWER IS A NUMBER AND YOU GET ONE POINT PER CORRECT DIGIT OR DECIMAL POINT. NOTES, TEXTBOOK AND USE OF MATLAB ARE ALLOWED, BUT NO ASSISTANCE FROM OTHER PEOPLE.

For answers that are real numbers, include all non-zero digits to the left of the decimal place, include the decimal place in a box, and as many digits to the right of the decimal place as will fit in the remaining boxes. Truncate, do not round, e.g., given five boxes for $\sqrt{7} = 2.64575131106\dots$, write “2.645”. If a number has no digits to the left of the decimal point, start with the decimal point, e.g., given ten boxes, write $1/\sqrt{2}$ as “.707106781”. Right justify integer answers, and place blanks (or zeros) in any remaining boxes on the left. For example, given 10 boxes to write 2^{20} either write “0001048576” or “1048576” preceded by three blank boxes.

(1)

Find $\sqrt{17}$.

(2)

Sum $1/\sqrt{n}$ from $n = 1$ to $n = 10,000$.

(3)

Write 2^{30} as an integer (usual decimal notation).

(4)

Let $x_0 = 1/3$ and for $n = 1, 2, 3, \dots$, let $x_{n+1} = 4x_n(1 - x_n)$ (e.g., $x_1 = .8888\dots$ and $x_2 = .3950\dots$). What is x_{10} ? (Remember the up arrows.)

(5)

What is the sum of all the integers $1 \leq n \leq 10,000,000$ that are perfect squares and end in the digit 1? (A perfect square is a integer that is the square of some integer. You may wish to use logical indexing the command `mod(a,b)` which gives the value of a modulo b , i.e., the remainder when a is divided by b .)

(6)

Find the first place in the decimal expansion of π that the sequence “999999” occurs. What are the ten digits that come just before these? Use the command `y=char(vpa(pi,n))` to create a string on the first n digits (including the 3 and the “.”). Then use `strfind`.