Name: _____

MAT331 Fall 2023, Quiz 1 ID: _____

Every answer is a number. You get one point per correct digit or decimal point. Notes, textbook, and use of MATLAB are allowed, but no assistance from others.

For answers that are real numbers, include all non-zero digits to the left of the decimal place, the decimal place in its own box, and then as many digits to the right of the decimal place as will fit in the remaining boxes. Truncate your answer. For example, given five boxes, $\sqrt{7} = 2.64575131106\ldots$, write "2.645". If a number has no digits to the left of the decimal point, start with the decimal point. For instance, write $1/\sqrt{2}$ as ".7071". Right justify integer answers and place blanks (or zeros) in any remaining boxes to the left. For example, 2^{20} can be written either "0001048576" or "1048576" with three blank boxes to the left.

1. Find $\sqrt{19}$.

2. Sum $1/n^2$ from $n = 1$ to $n = 1,000$.

3. Write 4^{15} as an integer with the usual decimal notation. You may want to use `format longG`.

4. Let $x_0 = 1/3$ and for $n = 1, 2, 3, \ldots$, let $x_{n+1} = 3x_n(1 - x_n)$. What is x_{10}?

5. 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 of the first n digits of π, including "3" and ".". Then use `strfind`.

6. Compute the "gamma function" evaluated at 11.