> 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. Use `fzero` to solve $\cos(x) = 3x + \sin(x)$.

2. Find the maximum value of $x^3 \exp(-x^2/4) \sin(10x)$ on the real numbers.

3. Use the command `roots` to find the most positive (rightmost) real root of $x^5 + 2x^4 - 10x^3 + 4x^2 + x + 1$.

4. Use `fzero` to find the most positive (rightmost) zero of $f(x) = x^2 - 4 + \sin(10x)$

5. Which root does Newton's method find in the previous problem if we start at $x = 0$?

6. How many zeros does $g(x) = \cos(20\exp(2x)\sin(20x))$ have in the interval $[0, 1]$? Use the first three boxes. Which zero is closest to $1/2$? Use the seven boxes.