
Remember to indent the bodies of your IF-THEN and looping structures.

- 1) (5 pts) Consider the function

$$y = \begin{cases} x^2 - 1 & \text{if } x \text{ is divisible by 3} \\ x^2 + 3 & \text{if } x \text{ is not divisible by 3} \end{cases}$$

Write a MATLAB script that will generate a vector \mathbf{x} containing the elements from -20 to 20 in steps of 1, then evaluates the function y for this vector using a **for** loop. You will need to use the **mod** function.

- 2) (5 pts) Write a MATLAB script that will ask the user to input a series of positive numbers and compute their geometric mean, defined as

$$\sqrt[n]{x_1 \cdot x_2 \cdot \dots \cdot x_n}.$$

You should use a **while** loop to do the input. You can trigger the end of the input by having the user input a negative value. Test your script using the input values 10, 5, 8, 3, 9, 11, 6.

- 3) (8 pts) Suppose you have a vector x of length n . The harmonic mean of the elements of the elements of x is given by

$$H = \frac{n}{\frac{1}{x_1} + \frac{1}{x_2} + \dots + \frac{1}{x_n}}$$

Write a script that will generate a vector of random elements of length 1000 and computes the harmonic mean of the vector elements.