Assignment 3

The due date for submitting the assignment has passed. Due date moves 2 days after the original due date.

1. Increasing the number of grid points in the computational domain, the truncation error is:
   - Increasing
   - Decreasing
   - Does not change
   - Noise at all due dates
   - How it is shown to proceed.
   - Assignment correct.

2. According to the Law equivalence theorem, for a numerical scheme to be convergent, it should be:
   - Consistent
   - Stable
   - Consistent and stable
   - Consistent, convergent and stable not available
   - Assignment correct.

3. 241 is the number of squares that are not differentiable at an interface.
   - True
   - False
   - How it is shown to proceed.
   - Assignment correct.

4. In the iteration graph of truncation error vs. grid size (Ax), I and II respectively represent:
   - Forward difference and Central differences
   - Central difference and Forward differences
   - Both forward difference and Central difference
   - None of the above
   - How it is shown to proceed.
   - Assignment correct.

5. Which type of grid is best for flow over a horizontal flat plate?
   - Uniform grid
   - Non-uniform grid with increasing grid size in the direction
   - Non-uniform grid with decreasing grid size in the direction
   - Non-uniform grid with increasing grid size in both x & y direction
   - How it is shown to proceed.
   - Assignment correct.

6. On repeating the forward difference operation (f^n) on f^n, we will get:
   - f^n + f^n - f^n
   - f^n - f^n - f^n
   - f^n - f^n + f^n
   - How it is shown to proceed.
   - Assignment correct.

7. In the finite difference expression, let f(x) = x^n, then what is f(2).
   - 1
   - 2
   - 3
   - How it is shown to proceed.
   - Assignment correct.

8. In the numerical example, let the value of C is:
   - How it is shown to proceed.
   - Assignment correct.

9. The order of the leading truncation error is:
   - How it is shown to proceed.
   - Assignment correct.

10. Consider the function f(x) = x^3 using a first increment of Ax = 0.1. What is the forward difference formula, when compared with the exact value, gives an error percentage of _______ (show two decimal places).
   - How it is shown to proceed.
   - Assignment correct.