

**Suggested Submission Date: Monday 23rd November 2020, 2pm**

**Coursework 1**

*Your results to the assessed coursework may be submitted using this template. Please cut and paste the subsequent output into the correct parts of this file and replace the placeholder `solution.jpg` plots with your own. Once this template has been completed, you must then create a pdf file for submission. Under Windows or Mac you can use Texmaker + a LaTeX compiler; from the Windows Virtual Desktop this may be accessed as follows:*

Start > UoN Applications > (UoN) Texmaker 5

*Open this file under File; to build the pdf file, click the arrow next to Quick Build; this will then generate the file `Coursework1_submission.pdf`.*

**A single zip file containing your solution should be submitted on Moodle. Note: All parameters and values should be set within your codes: do NOT use inputs such as those obtained with `std::cin`.**

Your code should be separated into a folder `main`, with subfolders `source` and `include` as follows:

**File checklist:**

`Coursework1_submission.pdf`

**main:**

- `Q1c.cpp`
- `Q2b.cpp`
- `Q3b.cpp`
- `Q3c.cpp`

**source:**

- `general.cpp`
- `quadrature.cpp`
- `linear_algebra.cpp`
- `fem.cpp`

**include:**

- `general.hpp`
- `quadrature.hpp`
- `linear_algebra.hpp`
- `fem.hpp`

1(a) No output required.

1(b) No output required.

1(c) Enter your output here:

```
%%%%%%%%%%%%%% Output for 1b %%%%%%%%%%%%%%%  
n=5, Approximation = ....., Error = .....
```

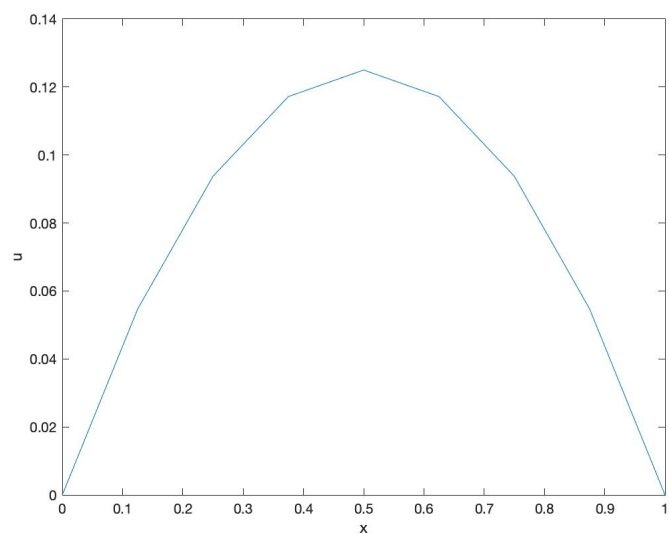
2(a) No output required.

2(b) Enter your output here:

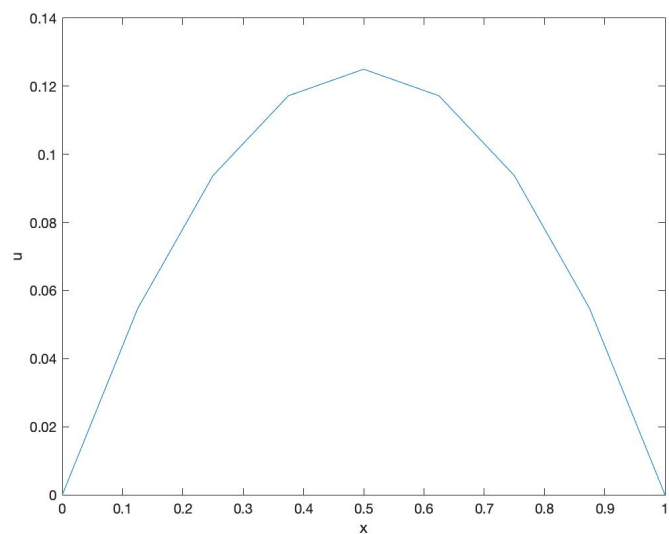
```
%%%%%%%%%%%%%% Output for 2b %%%%%%%%%%%%%%%  
n = 10, Iterations = , Error = .....
```

3(a) No output required.

3(b) Enter your your plot for  $N = 100$  below:



3(c) Enter your your plot for  $N = 10$  below:



Enter your your plot for  $N = 100$  below:

