Computational Mathematics - Problem Sheet 2

MT 2017

Once you have completed all exercises, use the `publish` command to generate an .html or .pdf file of your solutions. Print it out and hand it to your demonstrator at the beginning of the next session.

1. Let

$$f(x) = 5x^2 + 3x - 4, \tag{1}$$

and

$$g(x) = -4x^2 + 6x + 5. \tag{2}$$

   (a) Plot the functions $f(x)$ and $g(x)$ for $x \in [-2, 2]$ on the same graph.

   (b) Find the points of intersection of the curves.

   (c) Find the area bounded by the two curves.

2. Calculate a numerical approximation to this area using the functions `trapz` and `linspace` with (a) 10 gridpoints, (b) 100 gridpoints.

3. Using `linspace`, approximate the area by writing your own trapezium rule solver. Compare your results with those in Q2.