

Computational Mathematics - Problem Sheet 2

MT 2022

Once you have completed the exercises, use the `publish` command to generate a .pdf file of your solutions.

1. Consider the functions f and g given by

$$f(x) = 5x^2 + 3x - 4 \text{ and } g(x) = -4x^2 + 6x + 5.$$

- (a) Plot $f(x)$ and $g(x)$ for $x \in [-2, 2]$ on the same graph.
 - (b) Find the points of intersection of the two 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 and (b) 100 gridpoints.
 3. Using `linspace`, approximate the area by writing your own trapezium rule solver. Compare your results with those in Q2.