

## Exercise: composite quad. rules and order of convergence

Consider the three composite quadrature rules:

- composite midpoint rule
- composite trapezoidal rule
- composite Simpson rule

and write a MATLAB function that uses them (on a uniform subdivision in elements of mesh-size  $h$ ) to approximate

$$\int_0^1 \sin(\pi x) dx = \frac{2}{\pi}$$

Then, plot the error versus  $h$ , and identify on a log-log plot the order of convergence of the three rules (include in the same figure the reference plots:  $h$ ,  $h^2$ ,  $h^3$ , ...)