

Section 2: Area under a curve



Exercise level 3 (Extension)

1. A designer is producing a stencil with which to decorate a restaurant wall. She is creating a series of “petals”, using the two graphs:

$$\text{A: } y = \frac{1}{15}x(x-1)(x-3)(x-5)$$

$$\text{B: } y = -\frac{1}{25}x(x-1)(x-3)(x-5)$$

where both x and y are measured in metres.

- (i) Sketch the two graphs on the same set of axes.
- (ii) Find three definite integrals between suitable limits to deduce the total area enclosed between this graph and the x -axis.
- (iii) Hence deduce the total area of the petals design.