Problem areas

Teacher notes

Why use this resource?

The two functions explored in this problem share several key features, such as symmetry, but differ in that the area under one can be evaluated exactly (without using integration). It is worth noticing that this problem can be solved very quickly by plotting the two functions on the same axes but students should also be encouraged to dig deeper and consider each function in its own right too.

It is interesting to think about the effectiveness of methods of estimation with regards the second function. The trapezium rule very quickly provides a surprisingly good approximation - why it does so for this function (and not others) is worth discussing.

Preparation

Problem page could be printed out for students to work on.

Possible support

Students struggling with this problem could tackle Approximating areas first.