Additional integrals

Teacher notes

Why use this resource?

In a similar vein to What else do you know? but now incorporating two given integrals, this problem asks students to think about links between some related integrals.

Preparation

This could be conducted as a card sort and printable cards have been provided, but these are not necessary for the task to be used.

Mini-whiteboards could help to support sketching and discussion of the various integrals.

Possible approach

Students work in pairs or 3s to decide which card they can find a value for. Once they have had an opportunity to find some of them, they can share ideas with another group and discuss any discrepancies, coming to a consensus. A plenary discussion can then be used to resolve any issues, with groups justifying their answers to the class. This part is especially useful if there is a mix of correct and incorrect answers in the room.

Key questions

- What role do the limits play?
- How are $f(x)$ and $f(x+1)$ related?
- What does the 2 in $g(x)+2$ do? What about in $2g(x)$?

Possible support

To support this problem, students could be encouraged to think about the integrals in terms of transformations of the original functions and to make some sketches. It may be helpful to ask students to state whether the function being integrated is different, or if the limits have been changed. This may help them to start to categorise the integrals.

Students could also try What else do you know? first.

Possible extension

Students could try inventing their own combination integrals for others to calculate (they must of course have a properly worked out answer)! Students could usefully think about whether there are any circumstances in which card B would be possible to calculate.