Integral chasing II
Teacher notes

Why use this resource?

This resource is made up of four integrals that require the use of a variety of techniques. Students will have to decide which integration technique to use for each integral and solve them to find the unknowns a, b, c and d. There is an element of self checking as the final integral provides an opportunity to see whether their values of a and c are correct.

Possible approaches

Students could be put into groups of 4 and encouraged to each start with a different integral, as they can work algebraically with the unknowns. For example, much of the work in (4) can be done before the values of a, b and c are needed. As answers arrive they can start to collaborate with the owner of part (4) for checking.

When the values for a, b, c and d have been found there is an opportunity to reflect on the approaches that have been taken for each integral. For example in (1), some students may have thought about the integral $\int_1^a \frac{1}{(3x)} \, dx$, whereas others may have thought about $\frac{1}{3} \int_1^a \frac{1}{x} \, dx$. It may also be worthwhile to have a discussion about when you know the approach you are trying is *not* going to be successful.

Key questions

- What integration technique could you use?
- Could integration by parts be used? Why? Why not?
- How do you decide which function to use as u and which as v'?
- Could integration by substitution be used? Why? Why not?

Possible support

If the integrals are attempted in order, mistakes should become apparent if they use the incorrect values for a, b, c or d. Encourage students to check each other's work if they cannot find their own mistakes.

Last updated 27-Jun-17