

## STEP II, 2011, Q6 EC

**Q6** This was another very popular question attracting many poor scores. There were several very serious errors on display, including the beliefs that

$$\int f(x)^n dx = \frac{f(x)^{n+1}}{(n+1)} \quad \text{or} \quad \frac{f(x)^{n+1}}{(n+1)f'(x)}.$$

The understanding that the original integral needed to be split as  $\int f'(x) \times (f'(x)f(x)^n) dx$  before attempting to integrate by parts was largely absent, with many substituting immediately for  $f(x)f'(x)$  in terms of  $f''(x)$ , which really wasn't helpful at all. Those who got over this initial hurdle generally coped very favourably with the rest of the question.

In (i), it was quite common for candidates to omit verifying the result for  $\tan x$ .



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