

STEP II, 2017, Q7 EC

Just over one thousand candidates attempted this question, but more than 400 of these attempts were not substantial; removing the large number of those scripts which got no further than part (i) raises the mean score from well under 8 to just over 12 out of 20.

The difficulty with questions like this is that it is very easy to make correct statements but much more difficult to support them with logically-crafted steps of reasoning based on results either given or known. Moreover, one needs to reason in such a way that the steps of working one writes down are justified ... this was the principal barrier to anything more than the most faltering of starts. So, part (i) was an issue for candidates, with much written but not much of it coherently stated or supported. Of the few marks gained in the weaker attempts, part (ii) provided the majority of them, since most candidates were happy to take logs and then differentiate (the standard procedure for exponential equations of this kind).

It was slightly surprising to note that so few candidates attempted to establish the initial result in part (iv) using calculus; most of those that got this far presumably thought some other "inequality" technique was being tested.

Finally, even for those who had made good progress in several of the previous parts, the graphs at the end were frequently marred by a lack of labelling.



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