MAT137Y1 - Calculus!
Comments about common errors on Test 4
24th March, 2017

Q4. The quantity $\int_0^\infty e^{-x}dx$ is an improper integral. To compute it, you need to set it up as a limit. Otherwise, your answer cannot possibly be right, even if you end up with the right numerical final result.

Q6–Q7. These questions are very similar to Q2 on PS #7. If you worked on PS #7, you probably found this question easy.

Even if you could not solve Q7, you should understand that $A(2017)$ is a definite integral, so the final answer must by a number (or possibly 'divergent'). We were surprised by many solutions that wrote $A(2017)$ as a function of x, which makes no sense.

Q8. The first three definitions were done well (great!) but not the fourth one. Many of you confused the notion of "divergent" with the notion of "divergent to ∞", which are not the same. Remember that definitions have to be precise. You won't be able to write a correct proof if you do not know the definitions of the concepts involved.

Q9. This question is **identical** to a question on PS #D. If you worked on PS #D, you probably recognized this question as free marks.

This question was done worst than we expected. In particular, some of you still have trouble with proofs with quantifiers. Remember that to prove a statement that begins with

$$\text{“}\forall M \in \mathbb{R} \ldots\text{”}$$

you need to being by fixing a generic M. The proof does not make sense otherwise. If this still confuses you, you may benefit from attending Beatriz's review session on $\varepsilon - \delta$ proofs.