Mathematics 3A03 Real Analysis I

2019 ASSIGNMENT 6

This assignment is **due** on **Monday 1 April 2019 at 11:25am**.
PLEASE NOTE that you must **submit online** via crowdmark.
You will receive an e-mail from crowdmark with the required link.
Do **<u>NOT</u>** submit a hardcopy of this assignment.

*<u>Note</u>: Not all questions will be marked. The questions to be
marked will be determined after the assignment is due.*

1. Suppose f is continuous on $[a, b]$. Prove that

$$\left| \int_a^b f(x)\, dx \right| \leq \int_a^b |f(x)|\ dx\,.$$

2. Prove that if $f(x) = \displaystyle\int_0^x f(t)\, dt$ then $f = 0$.

   <u>*Hint:*</u> First prove that f is differentiable and $f'(x) = f(x)$. Then consider the derivative of the function $g(x) = f(x)/e^x$.