	Department of Mathem	ATICS
MATHS255FC	Assignment 9	Due: 4pm, Wednesday 29 May 2002

NB: You are to work individually on assignments. You may do all your other work together. If we believe you have **worked together**, let alone COPIED someone else's script or let someone else COPY YOUR SCRIPT, then you will get NO MARKS.

1. (10 marks) Let $f : \mathbb{R} \to \mathbb{R}$ and $g : \mathbb{R} \to \mathbb{R}$ satisfy $\lim_{x \to \infty} g(x) = \infty$, and $\lim_{x \to \infty} f(x) = \infty$.

- (a) Prove $\lim_{x\to\infty} f(g(x)) = \infty$.
- (b) Prove $\lim_{x\to\infty} (f+g)(x) = \infty$.
- (c) Prove that for all $k \in (0, \infty)$, $\lim_{x \to \infty} kf(x) = \infty$.
- (d) Prove $\lim_{x\to\infty} -f(x) = -\infty$.
- (e) Prove $\lim_{x\to-\infty} f(-x) = \infty$