

**MATH 3190**  
**Limits Homework #2**  
**Due 2 March 2015**

**Name:** \_\_\_\_\_

You may not use your notes. Please show all of your work. An answer without justification will receive little credit.

Prove the following statements involving limits.

- (1)  $\lim_{n \rightarrow \infty} \left[ \frac{n^2-1}{n} \right] = \infty$ .
- (2)  $\lim_{n \rightarrow \infty} [(-1)^n]$  does not exist.
- (3)  $\sum_{n \geq 1} 1 = \infty$
- (4)  $\sum_{n \geq 1} (-1)^n$  does not exist.