Math 299 **Homework assignment, due 11/25**

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1. Use the formal definition of limit of a sequence to prove the following.

   (a) $\lim_{n\to\infty} \dfrac{n^2}{n^2-1} = 1$

   (b) $\lim_{n\to\infty} \dfrac{2n}{3n^2-1} = 0$

   (c) $\lim_{n\to\infty} \dfrac{\left(1+\frac{1}{n}\right)^2 - 1}{\frac{1}{n}} = 2.$

2. Prove the following proposition.

If the sequence (a_n) converges, then its limit is unique.