Math 6B: Sequences "Quiz"

April 12, 2016

Name: _____ Score: NA

Directions: Open book, open note, open neighbor.

Disclaimer: The content and level of difficulty of this quiz are not guaranteed to be in correlation with the midterm nor final examinations in any form.

Determine if the following sequences converge or diverge. If the sequence converges, find its limit. Be sure to explain what theorems you used to reach your conclusion.

1. $a_n = \dfrac{3 + 5n^2}{n^2 + n}$

2. $a_n = \dfrac{n \cos n^2}{n^2 + 100}$

3. $a_n = \dfrac{(-1)^n n^4}{n^3 + 2n^2 + 1}$

4. $a_n = \ln(2n^2 + 1) - \ln(n^2 + 1)$

5. $a_n = \dfrac{2^n}{n!}$

6. $a_n = \dfrac{n!}{2^n}$