MATH 181   Calculus and Analytic Geometry II   Fall 2009   Practice Quiz #1

1. Complete each of the following:

    (a) Roughly speaking, a *sequence* is

    (b) Roughly speaking, a *series* is

2. For each of the following, state the limit of the given sequence (where n is the sequence index). Include any restrictions on x if required.

    (a) $n^{1/n} \to$

    (b) $x^n \to$

    (c) $\left(1 + \dfrac{x}{n}\right)^n \to$

3. List the two *sequences* that are associated with the *series* $\displaystyle\sum_{k=1}^{\infty} a_k$.

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4. Complete the following sentence: If the sequence of terms $\{a_k\}$ does not converge to 0, then the series $\displaystyle\sum_{k=1}^{\infty} a_k$ is

5. For each of the following, state whether the given series is convergent or divergent.

    (a) $\displaystyle\sum_{k=1}^{\infty} \dfrac{1}{k}$ (b) $\displaystyle\sum_{k=1}^{\infty} \dfrac{1}{k^2}$

6. For geometric series $\displaystyle\sum_{k=0}^{\infty} x^k$, give the range of x values for which the series is convergent and give the limit.