

Worksheet 13

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1. Show that the series $\sum(-1)^{n-1}b_n$, where $b_n = 1/n$ if n is odd and $b_n = 1/n^2$ if n is even, is divergent. Why does the Alternating Series Test not apply?

2. Is the series

$$\sum_{n=1}^{\infty}(\sqrt[n]{2} - 1)$$

convergent or divergent?

3. For which positive integers k is the following series convergent?

$$\sum_{n=1}^{\infty} \frac{(n!)^k}{(kn)!}$$