Your Name

1. Determine whether the indicated series converges. Justify your answer by indicating the test to be used (from the text or class) and carrying out the details of that test. (5 points each)

(a) $\sum_{k=0}^{\infty} k e^{-\sqrt{k}}$

(b) $\sum_{n=1}^{\infty} \frac{1}{2^{(n+(-1)^n)}}$.

Your Name **2.** Suppose that $\sum_{k=1}^{\infty} a_k$ converges conditionally. Prove that

$$\sum_{k=1}^{\infty} k^2 a_k$$

must diverge.

Hint: Suppose it didn't diverge, what can you say about $\lim k^2 a_k$. Using that definition of the limit, *compare* the terms a_k with $1/k^2$.