1. Use the Integral Test to determine if the following series converge or diverge.

   a) $\displaystyle\sum_{n=0}^{\infty} \frac{1}{1+n^2}$

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

c) $\displaystyle\sum_{n=1}^{\infty} n^2 e^{-n^3}$

d) $\displaystyle\sum_{n=1}^{\infty} \frac{\ln(n)}{n}$