l) Let $\{a_n\}$ be the sequence given by

$$a_n = \frac{\ln(1+\frac{2}{n})}{\sin\frac{1}{n}}.$$

Determine if it is convergent.

2) Determine the open interval of values of x for which the series

$$a_n = \sum_{n=0}^{\infty} (-2)^n x^n$$

is convergent?

3) Deternine whether the series

$$\sum_{n=1}^{\infty} \frac{2}{n^2 + 1}$$

is convergent USING THE INTEGRAL TEST.