1) Let $\left\{a_{n}\right\}$ be the sequence given by

$$
a_{n}=\frac{\ln \left(1+\frac{2}{n}\right)}{\sin \frac{1}{n}}
$$

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.

