K.A. Pericak-Spector

You must show all work!

Determine if the following series are convergent or divergent. Clearly give your reasons.

$$1. \sum_{1}^{\infty} \frac{n}{n^3 + 1}$$

$$2. \sum_{1}^{\infty} \frac{n}{\sqrt{n^4 + 1}}$$

$$3. \sum_{1}^{\infty} ne^{-n^2}$$

$$4. \sum_{2}^{\infty} \frac{1}{n \ln n}$$

5. 
$$\sum_{1}^{\infty} \sin n$$

$$6. \sum_{1}^{\infty} \frac{1+2^n}{5^n}$$