1. Determine whether the following series converge or diverge. State which convergence test you used.

A. $\displaystyle\sum_{n=1}^{\infty} 2^{-n}$

B. $\displaystyle\sum_{n=2}^{\infty} \frac{1}{\sqrt{n\sqrt{n-1}}}$

C. $\displaystyle\sum_{n=1}^{\infty} \frac{3^n}{(2n)!}$

D. $\displaystyle\sum_{n=0}^{\infty} \left(-\frac{1}{3}\right)^n$

E. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n n^3}{n^2}$

F. $\displaystyle\sum_{n=0}^{\infty} 2^n$

G. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}$

2. Suppose you know that $0 \le b_n \le \dfrac{1}{n} \le a_n$ and $0 \le c_n \le \dfrac{1}{n^2} \le d_n$ for all n.

A. Which of the series $\sum a_n, \sum b_n, \sum c_n$, and $\sum d_n$ definitely converge? Justify your answer.

B. Which of the series $\sum a_n, \sum b_n, \sum c_n$, and $\sum d_n$ definitely diverge? Justify your answer.