Convergence of Series III - Worksheet

1. Is $\displaystyle\sum_{n=1}^{\infty} \frac{\ln(x)}{x^3}$ convergent? Why?

2. Is $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n \sin(n)}{n^2}$ convergent? Why?

3. Is $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n n^3}{n^3 + n^2 + 3}$ convergent? Why?

4. Is $\displaystyle\sum_{n=1}^{\infty} \frac{\sqrt{2n^2 + 1}}{(n^2 + 1)^2}$ convergent? Why?

5. Is $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n+3}\sqrt{n + 2}}{n + 4}$ convergent? Why?

6. Is $\displaystyle\sum_{n=1}^{\infty} \frac{\ln(n) + 1}{\sqrt{n}}$ convergent? Why?

7. Is $\displaystyle\sum_{n=1}^{\infty} \frac{1}{\sqrt[5]{n + 5}}$ convergent? Why?

8. Is $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{n \ln(n)}$ convergent? Why?

9. Is $\displaystyle\sum_{n=0}^{\infty} \frac{n + \sqrt{n}}{n}$ convergent? Why?

10. Is $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n n!}{(n + 3)!}$ convergent? Why?