Section 4-7 : Comparison Test/Limit Comparison Test

For each of the following series determine if the series converges or diverges.

1. $\displaystyle\sum_{n=1}^{\infty}\left(\frac{1}{n^2}+1\right)^2$

2. $\displaystyle\sum_{n=4}^{\infty}\frac{n^2}{n^3-3}$

3. $\displaystyle\sum_{n=2}^{\infty}\frac{7}{n(n+1)}$

4. $\displaystyle\sum_{n=7}^{\infty}\frac{4}{n^2-2n-3}$

5. $\displaystyle\sum_{n=2}^{\infty}\frac{n-1}{\sqrt{n^6+1}}$

6. $\displaystyle\sum_{n=1}^{\infty}\frac{2n^3+7}{n^4\sin^2(n)}$

7. $\displaystyle\sum_{n=0}^{\infty}\frac{2^n\sin^2(5n)}{4^n+\cos^2(n)}$

8. $\displaystyle\sum_{n=3}^{\infty}\frac{\mathbf{e}^{-n}}{n^2+2n}$

9. $\displaystyle\sum_{n=1}^{\infty}\frac{4n^2-n}{n^3+9}$

10. $\displaystyle\sum_{n=1}^{\infty}\frac{\sqrt{2n^2+4n+1}}{n^3+9}$