10.6 Comparison Tests for Convergence

Calculus Name: ______________________________ **CA #2**

1. Which of the following series converges?

(A) $\displaystyle\sum_{n=1}^{\infty} \frac{5n}{n^2+2}$ (B) $\displaystyle\sum_{n=1}^{\infty} \frac{5n^2}{6n^2+2n+1}$

(C) $\displaystyle\sum_{n=1}^{\infty} \frac{5n}{n^2+2n}$ (D) $\displaystyle\sum_{n=1}^{\infty} \frac{4n^2}{n^3+2n}$ (E) $\displaystyle\sum_{n=1}^{\infty} \frac{3n^2}{n^5+2n}$

2. Which of the following series can be used with the Limit Comparison Test to determine whether the series $\displaystyle\sum_{n=1}^{\infty} \frac{n3^n+1}{4n^3+1}$ diverges or converges?

(A) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{3^n}$ (B) $\displaystyle\sum_{n=1}^{\infty} 3^n$

(C) $\displaystyle\sum_{n=1}^{\infty} \frac{3^n}{n^2}$ (D) $\displaystyle\sum_{n=1}^{\infty} \frac{n3^n}{4}$

3. Use the Comparison Test to determine the convergence or divergence of the series $\displaystyle\sum_{n=1}^{\infty} \frac{n-3}{n7^n}$. You must identify the series you are using for comparison.

4. Use the Comparison Test to determine the convergence or divergence of the series $\displaystyle\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n^3+4}$. You must identify the series you are using for comparison.

5. Determine whether the series $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n\sqrt{n^2+1}}$ converges or diverges. Identify the test for convergence used.

Answers to 10.6 CA #2

1. E	2. C	3. Converges by comparison to $\sum_{n=1}^{\infty} \frac{1}{7^n}$, a convergent geometric series.	4. Converges by limit comparison to $\sum_{n=1}^{\infty} \frac{1}{n^{2.5}}$, a convergent p-series.	5. Converges by limit comparison to $\sum_{n=1}^{\infty} \frac{1}{n^2}$, a convergent p-series.