MAC 2312 Calculus II, Worksheet #11 (Sec 11.2-11.3)

Date: _____   Name: _____

For problems 1-2, determine whether the following series is convergent of divergent:

Q1) $\displaystyle\sum_{n=2}^{\infty} \frac{2}{n^2-1}$

Q2) $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n^3-n}$

For problems 3-4, express the number as a ratio of integers:

Q3) $0.\bar{8}$

Q4) $7.\overline{12345}$

Q5) A sequence of terms is defined by

$$a_1 = 1, \qquad a_n = (5-n)a_{n-1}$$

Calculate $\displaystyle\sum_{n=1}^{\infty} a_n$.

For problems 6-9, using Integral Test to determine whether the series is convergent or divergent:

Q6) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{(2n+1)^3}$

Q7) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n \ln n}$

Q8) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n(\ln n)^2}$

Q9) $\displaystyle\sum_{n=1}^{\infty} n^2 e^{-n^3}$

Q10) Explain why Integral test cannot be used to determine the convergence of $\displaystyle\sum_{n=1}^{\infty} \frac{\cos(\pi n)}{\sqrt{n}}$.