Name: ____

Student No.: _____

Assignment $#2$	Math 2000	W-2006
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1. Determine which of the following series is divergent and explain why.

a)
$$\sum_{n=1}^{\infty} \frac{n+1}{2n-1}$$
 b) $\sum_{n=1}^{\infty} \frac{3^n}{n^3}$
c) $\sum_{n=1}^{\infty} \frac{2^n}{100}$ d) $\sum_{n=1}^{\infty} (1+\frac{k}{n})^n$ e) $\sum_{n=1}^{\infty} (\frac{n}{n+3})^{-2n}$.

2. For each of the following series, find the sum of the convergent series.

(a)
$$\sum_{n=1}^{\infty} [(0.7)^n + (0.9)^n]$$

(b) $4 - 2 + 1 - \frac{1}{2} + ...$
(c) $\sum_{n=0}^{\infty} \frac{(-2)^{n+1}}{3^n}$

3. Find the values of x for which the series converges, and find the sum of the series for those values of x.

(a)
$$\sum_{n=0}^{\infty} \frac{(4x-1)^n}{5^n}$$

(b)
$$\sum_{n=0}^{\infty} (\cos x)^n$$

- 4. Express the repeating decimal as a geometric series and write its sum as the ratio of two integers.
 - (a) 0.21515515515...
 - (b) 1.8181818181818181818...
- 5. Use the Integral test to determine the convergence or divergence of the series:

(a)
$$\sum_{n=1}^{\infty} (n)^k (e)^{-n}$$

(b)
$$\sum_{n=1}^{\infty} \frac{1}{n^{1/3}}$$

(c)
$$\sum_{n=1}^{\infty} \frac{1}{n^{\pi}}$$

(d)
$$\sum_{n=2}^{\infty} \frac{\ln n}{n^3}$$