## MATH 133, QUIZ \#7

(1) Which of the follwing infinite series are geometric series? If you encounter a geometric series, determine whether it diverges or converges and find its value. ( 6 points):
(a)

$$
\sum_{n=1}^{\infty} \frac{n}{2^{n}}
$$

(b)

$$
\sum_{n=1}^{\infty}(-1)^{n-1} 2^{n}
$$

(c)

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

(2) Write the number $0 . \overline{123}=0.123123123 \ldots$ as a quotient of two integers. Show your work (2 points).
(3) Does the following infinite series converge or not? (2 points)

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

