DEPARTMENT OF MATHEMATICS
UNIVERSITY OF KANSAS

Sample Exam I

MATH 122 Spring 2014

Your Name: _____

1		_____
2	()	_____
3	()	_____
4	()	_____
5	()	_____
6	()	_____
Total (100)		_____

(1) Determine whether the series is convergent or divergent

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

(2) Show that the following series converges

$$s = \sum_{n=1}^{\infty} (-1)^n \frac{\sqrt{n}}{n+1}.$$

Determine an integer N, so that $|s - s_N| \leq 0.1$, where $s_N = \sum_{n=1}^{N} (-1)^n \frac{\sqrt{n}}{n+1}$.

(3) Find the sum of the series
$$\sum_{n=0}^{\infty} \frac{(-2)^n}{3^{2n}}.$$

(4) For the power series
$$\sum_{n=0}^{\infty} \frac{(x-1)^n}{3^n n^2}$$
determine the radius of convergence and the interval of convergence.

(5) Determine whether the following series converges

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

If it does converge, determine N, so that $|s - s_N| \leq 0.1$.

(6) Find the MacLaurin series for the function

$$f(x) = \cos(x^3).$$