

Math 231 Mock Exam 2

October 30, 2007

- (1) Find a power series representation for $f(x) = \ln(1 + 2x^3)$.

(2) Does

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

converge or diverge?

(3) Does the series

$$\sum_{k=3}^{\infty} \frac{12}{16k^2 + 8k - 3}$$

converge or diverge? If it converges, find its value.

(4) Find the interval of convergence of the power series

$$\sum_{k=1}^{\infty} \frac{(2-x)^k}{k3^k}.$$

What is the radius of convergence?

(5) Does

$$\sum_{k=1}^{\infty} (-1)^{k+1} \frac{2^k}{k!}$$

converge or diverge? If it converges, determine if the convergence is absolute or conditional and approximate the value of the series within .001.

(6) Does

$$\sum_{k=4}^{\infty} \frac{\ln(k)^3}{2^k}$$

converge or diverge?