Math 126 – Quiz 10 Name_____

1. Determine the interval of convergence for the following power series.

$$\sum_{n=0}^{\infty} (-1)^{n+1} \frac{(x-1)^n}{n \cdot 3^n}$$

2. Differentiate the following power series.

$$\sum_{n=0}^{\infty} (2x)^n = 1 + 2x + 4x^2 + 8x^3 + 16x^4 + \ldots$$

3. What are the first three terms of the power series obtained from multiplying the following two power series? (Note – they have the same interval of convergence.)

$$\sum_{n=0}^{\infty} (n + 1)\, x^n = 1 + 2x + 3x^2 + 4x^3 + \ldots$$

$$\sum_{n=0}^{\infty} (n + 10)\, x^n = 10 + 11x + 12x^2 + 13x^3 + \ldots$$

4. What are the first three terms in the Maclaurin series for $\ln(2 + x)$?