QUIZ 7

1. 8 points   Consider the power series

$$\sum_{n=1}^{\infty} \frac{(x-3)^n}{n^{3/4}}$$

For what values of x does the series converge absolutely, converge conditionally, or diverge? Follow the steps below:

(a) Find the center of the series.

(b) Find the radius of convergence of the series.

(c) Test for convergence at the end-points of the interval of convergence.

(d) Finally, organize your answer, as follows:

- Series converges absolutely for: _____

- Series converges conditionally for: _____

- Series diverges elsewhere.

2. 6 points   From the definition, find the degree 3 Taylor polynomial for $f(x) = \ln x$, centered at $a = 1$.

3. 6 points   Recall that

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \cdots + (-1)^n \frac{x^{2n}}{(2n)!} + \cdots$$

for all real x. Using this Maclaurin series for $\cos x$, find:

(a) The degree 4 Maclaurin polynomial for $\cos(\sqrt{2x})$.

(b) The degree 4 Maclaurin polynomial for $\dfrac{\cos x - 1}{x^2}$.