MATH 105 – Written Homework #4

For this assignment, you are expected to provide full solutions with complete justifications. You will be graded on the mathematical, logical and grammatical coherence of your solutions. You are encouraged to work together, but your solutions must be written ***independently****. Please write your name and student number at the top of the first page. If your solutions are on multiple pages, the pages must be stapled together. This assignment is due at* ***1:00pm on Friday, August 4****. Late assignments will not be accepted.*

1. Determine whether each of the following series converges absolutely, converges conditionally, or diverges. Justify your answers.

   (a) $\displaystyle\sum_{n=7}^{\infty} \frac{(-1)^n}{n\ln(n)}$

   (b) $\displaystyle\sum_{n=1}^{\infty} \sqrt{\frac{4n^2-2}{9n^2+4}}$

   (c) $\displaystyle\sum_{n=3}^{\infty} \frac{5+n}{n^2\sqrt{4n-1}}$

2. Consider the power series
$$\sum_{n=1}^{\infty} \frac{(x-7)^n}{2n}.$$
   (a) Find the interval and radius of convergence of the power series.

   (b) Find the function the power series represents on its interval of convergence.

3. [**Bonus**] Find the sum of the series
$$\sum_{n=2}^{\infty} \frac{n^2-n}{2^n}.$$