AP Exam Free Response Practice for Power Series

The function is defined by the power series

For all real numbers x for which the series converges.

1. Determine the interval of convergence for . Justify your answer.
2. Given , find the first three terms and the general term of the power series for .
3. Find a rational function that is identical to over its interval of convergence.
4. Let be the function defined by Find a function that represents .