Name:

Math 10a Quiz 7
October 23, 2013

1. (2 points) Does the following series converge or diverge? Justify your answer.

$$\sum_{m=1}^{\infty} \left(\frac{5m^2 - 10}{2m^2 + m} \right)^m$$

2. (4 points) Let f be a function that $f(0) = 0$ and $f^{(k)}(0) = 3^k(k-1)!$ for each $k \geq 1$. What is the largest open interval centered at 0 on which the Taylor series for f centered at 0 converges? Justify your answer.

3. For this problem, consider the power series $1 + x + x^2 + \cdots = \sum_{k=0}^{\infty} x^k$.

   (a) (1 point) For what values of x does the power series converge? (you do not need to justify your answer)

   (b) (1 point) When the series does converge, what value does it converge to? Write your answer as a rational function of x.

   (c) (2 points) Write down a power series that converges to

   $$\frac{1}{(1-x)^2}$$

   for $|x| < 1$.