Homework 16, Due March 24, class time
Instructions: Please upload your homework submission into the box folder named Calculus_2_submissions before the class time on March 24. Your file or files should be named hwk16 Lastname pagenumber.
Examples: hwk16_Jones1.pdf or hwk16_Smith2.jpg. It is OK to have multiple pages in a single file. I strongly prefer pdf files, but I will also accept picture files. Please email me or consult your classmates ahead of time if you need help following instructions. Thank you!!!

1. Determine if the following geometric series converge or diverge. For each convergent series find its sum.

   (a)
   $$\sum_{n=1}^{\infty} \left(\frac{2}{3}\right)^{n-1};$$

   (b)
   $$\sum_{n=1}^{\infty} 4\left(\frac{-2}{5}\right)^{n};$$

   (c)
   $$\sum_{n=1}^{\infty} \left(\frac{5}{3}\right)^{n};$$

   (d)
   $$3 - 1 + \frac{1}{3} - \frac{1}{9} + ...$$

2. Write the reapeating decimal as the ratio of two integers:

   (a)
   $$.333333...$$
   (Hint: $.333333... = \frac{3}{10} + \frac{3}{10^2} + \frac{3}{10^3} + ...$);

   (b)
   $$.9999999...;$$

   (c)
   $$.121212...$$

   .

3. Find all values of x for which the series

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

converges. For these values of x write the sum of the series as a function of x.