# Math 101 – WORKSHEET 24
# SERIES

## 1. Skill 1: Geometric series and decimal expansions

(1) (Final 2013) Find the sum of the series $\sum_{n=2}^{\infty} \frac{3 \cdot 4^{n+1}}{8 \cdot 5^n}$. Simplify your answer.

(2) Express each decimal expansion using a geometric series, sum the series, then simplify to obtain a rational number.
   (a) $0.333333\ldots$

   (b) $0.5757575757\ldots$

   (c) $0.6545454545454\ldots$

## 2. Skill 2: Telecoping series

(3) Write an expression for the partial sums, decide if the series converges, and if so determine the sum.
   (a) $\sum_{n=1}^{\infty} \frac{2}{n(n+2)}$

   (b) $\sum_{n=0}^{\infty} (\tan(n) - \tan(n+1))$

   (c) $\sum_{n=1}^{\infty} \left(n^2 - (n+1)^2\right)$

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*Date*: 7/3/2016, Worksheet by Lior Silberman. This instructional material is excluded from the terms of UBC Policy 81.