

Math 222 (Steven Sam), Fall 2016
Homework 7, due November 2

Only the starred problems (8 total) need to be submitted for grading.

Chapter 4.4 (pages 79–80) from book: 16, 23, 26, 27, 28*, 29, 30*, 31, 36, 37*
Chapter 4.7 (page 84) from book: 2*, 3*, 4, 5

(E1)* Simplify $\sum_{i=0}^{100} (5^{i+1} - 5^i)$.

(E2) Write $T_{\infty} 2^x$ in summation notation.

For the following problems, I'll give you the beginning of a Taylor series. In each instance, identify the pattern, and write down the Taylor series in summation notation. For example, given $1 + x + x^2 + x^3 + x^4 + \dots$, the answer is $\sum_{i=0}^{\infty} x^i$.

(E3) $1 - \frac{x^3}{3!} + \frac{x^6}{6!} - \frac{x^9}{9!} + \frac{x^{12}}{12!} - \frac{x^{15}}{15!} + \dots$

(E4) $1 + \frac{x^2}{3!} + \frac{x^4}{5!} + \frac{x^6}{7!} + \frac{x^8}{9!} + \frac{x^{10}}{11!} + \dots$

(E5)* $x + \frac{x^3}{2!} + \frac{x^5}{4!} + \frac{x^7}{6!} + \frac{x^9}{8!} + \frac{x^{11}}{10!} + \dots$

(E6)* $x^2 + 2x^5 + 3x^8 + 4x^{11} + 5x^{14} + 6x^{17} + \dots$

(E7) $1 - \frac{2x}{3} + \frac{4x^2}{9} - \frac{8x^3}{27} + \frac{16x^4}{81} - \frac{32x^5}{243} + \dots$