

# Problem Set 6

## MATH 16B Spring 2016

7 April 2015

**Exercise.** Find the 3<sup>rd</sup> order Taylor polynomial of  $f(x) = \sqrt{x}$  at  $x = 1$ . Use it to approximate  $\sqrt{2}$ , and give a bound for the error in this approximation.

**Exercise.** Find a formula for the  $n^{\text{th}}$  order Taylor polynomial of  $e^x$  at  $x = 0$ .

**Exercise** (11.3.5, 11.3.11). Decide whether the sum converges or diverges, and find the value if it converges.

- $2 + \frac{2}{3} + \frac{2}{9} + \frac{2}{27} + \frac{2}{81} \cdots$
- $\frac{2}{5^4} - \frac{2^4}{5^5} + \frac{2^7}{5^6} - \frac{2^{10}}{5^7} + \cdots$