

**Math 16B: Short Calculus II**  
**Spring 2017, Section 1**  
**Homework Sheet 1**  
**Due: Friday, April 7, 2017**

Submit your solutions to the following problems in lecture on the due date above. Present your work in a clean and organized fashion, either on a printed copy of this document (preferred) or a separate sheet of paper. As stated in the syllabus, late submissions will **not** be accepted.

1. Find the derivatives of the following functions.

(a)  $f(x) = \frac{x^2 + 2x - 3}{x + 3}$

(b)  $f(x) = e^x(x^2 + 5)^4$ .

2. Suppose a population of bacteria is initially 100, and quadruples (i.e.  $\times 4$ ) every minute. Find  $P(t)$ , the population of bacteria after  $t$  minutes. Use your formula to estimate the number of bacteria after 3.5 minutes.
3. How much should be deposited into an account paying 7.8% interest, compounded monthly, in order to have a balance of \$21,000 after 4 years?