

Math 16A: Short Calculus I
Fall 2017, Section 3
Homework Sheet 3
Due: Wednesday, October 18, 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. For each of the following, compute the derivative of $f(x)$ at $x = a$ *using the definition of derivative* (in particular, do not use any “derivative rules” you may or may not have learned in a previous calculus class).

(a) $f(x) = 2x + 3, a = 2$

(b) $f(x) = \sqrt{x + 3}, a = 2$

2. Find the equation for the tangent line to $f(x) = x^2 + 3$ at $x = 5$.

3. Compute the following limit (note: your answer should have x 's in it, but no h 's).

$$\lim_{h \rightarrow 0} \frac{(x+h)^3 - x^3}{h}$$