Math 16A: Short Calculus I  
Fall 2017, Section 3  
Homework Sheet 7  
Due: Monday, November 20, 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. Consider the following function.

\[ f(x) = \frac{x^2 + 3x}{x - 1} \]

(a) For what values of \( x \) is \( f(x) \) positive? When it \( f(x) \) negative?

(b) Find all critical points of \( f(x) \).

\[ f'(x) = \frac{(2x + 3)(x - 1) - (x^2 + 3x)(1)}{(x - 1)^2} \]

(c) For what values of \( x \) is \( f(x) \) increasing? When is \( f(x) \) decreasing?

(d) Which critical points are local maxima? Which are local minima?

(e) For what values of \( x \) is \( f(x) \) concave up? When is \( f(x) \) concave down?