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 $f(x)$.

   (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?