1. (15 points) Answer the following questions about the function $f(x) = x^3 + 3x^2 - 24x$.

   (a) (5 points) For which values of $x$ is this function increasing? For which values is it decreasing? Label which is which.

   (b) (5 points) Where are this function’s extrema? Identify each as a local maximum or a local minimum.

   (c) (5 points) Where is the function concave up? Where is it concave down? Where are its points of inflection, if any? Label which is which.

2. (5 points) Determine where the function $g(x) = \frac{x^2+3}{x+1}$ is increasing and where it is decreasing. Label which is which.

3. (2 point bonus) Can a point of inflection of a function also be an extremum? Why or why not?