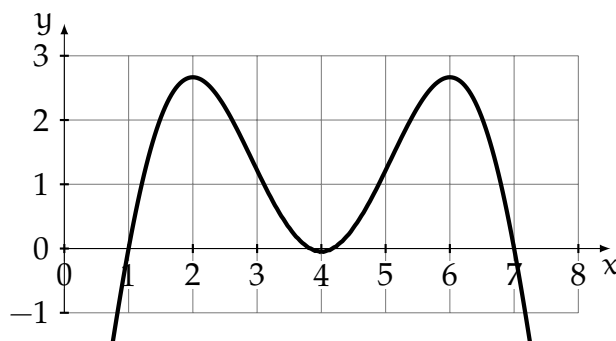


Homework 7

Due: May 7

Each problem is worth 3 points. Be sure to follow the homework guidelines.

1. Let $f(x)$ be a continuous function whose domain is $(0, 8)$. Consider the graph below:



- What are the the x -values of the inflection points of $f(x)$ if the graph pictured is of $f''(x)$? What are the the x -values of the inflection points of $f(x)$ if the graph pictured is of $f'(x)$? Briefly justify your answers.
2. You are a stock broker who has been particularly interested in the price of a certain cryptocurrency whose price has been quickly increasing. You have your firm's mathematician come up with a model for the price. After computing the model, the mathematician reports that you should expect an inflection point in the price in 6 days. You sigh, knowing how mathematicians talk. Give an interpretation of the mathematician's report using as little jargon as possible.
3. Let $f(x) = \frac{1}{4}x^4 - x^3$.
- Determine the domain, zeroes, and any asymptotes of $f(x)$.
 - Find the intervals of direction and local extrema of $f(x)$.
 - Find the intervals of concavity and inflection points of $f(x)$.
 - Use the information from parts (a), (b), and (c) to sketch a graph of $f(x)$, labeling all relevant points. A set of axes is included on the next page if you want to use them.

