

# Graphing with Calculators, Computers, and Calculus

## 1 Approximating values using a graph

### 1.0.1 Example

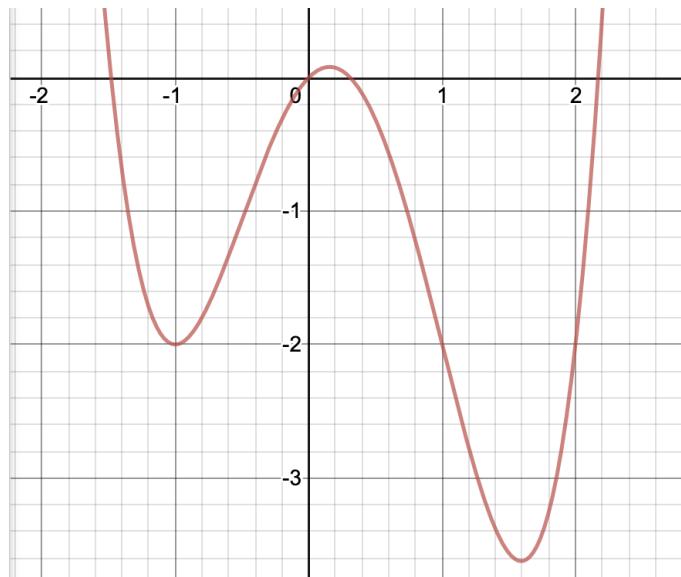
Use Desmos to approximate the intervals of increase, decrease, and intervals of concavity for the function

$$f(x) = \frac{x^2 + x}{3x^3 + 2x}$$

## 2 Using Calculus to Find Exact Values

### 2.0.1 Example:

The graph of  $f(x) = x^4 - x^3 - 3x^2 + x$  is shown below. Find the exact values of its intervals of concavity, and highlight them on the graph.



### 2.0.2 Example:

The function  $f(x) = x^3 + x^2 - 2x$  is shown here. Label the relative max, relative min, and inflection point. Then find the exact values of each point's  $x$ -coordinate.

