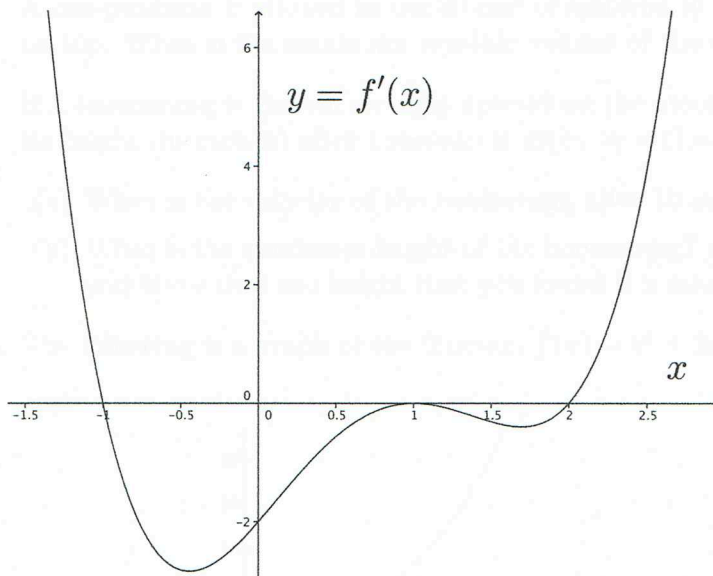


1. Consider the function $f(x) = x \cos(x)$. Use a linear approximation to estimate $f(0.1)$ and $f(-0.1)$.
2. The following is the graph of a function $f'(x)$



- (a) What are the critical points of the function $f(x)$?
 - (b) What are the locations of the local minimum points of $f(x)$? (In other words, at which x -values do the local minimums of $f(x)$ occur?)
 - (c) What are the locations of the local maximum points of $f(x)$? (In other words, at which x -values do the local maximums of $f(x)$ occur?)
 - (d) Where is $f(x)$ concave up?
 - (e) Where is $f(x)$ concave down?
 - (f) Sketch a graph of $f(x)$.
3. Consider the function $f(x) = \frac{x}{x+2}$.
 - (a) Argue that $f(x)$ satisfies the conditions for the Mean Value Theorem using the interval $[1,3]$.
 - (b) Find a c which satisfies the conclusion for the Mean Value Theorem for $f(x)$ on the interval $[1,3]$.
 4. Use the closed interval method to find the maximum and minimum values of the function $f(x) = 2x\sqrt{9-x^2}$ on the interval $[1,3]$.