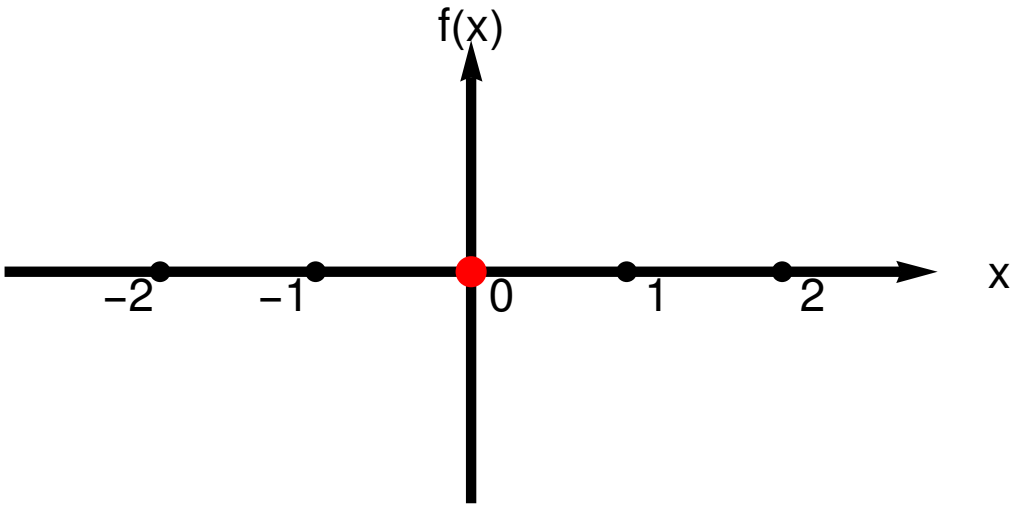
INTRODUCTION TO CALCULUS

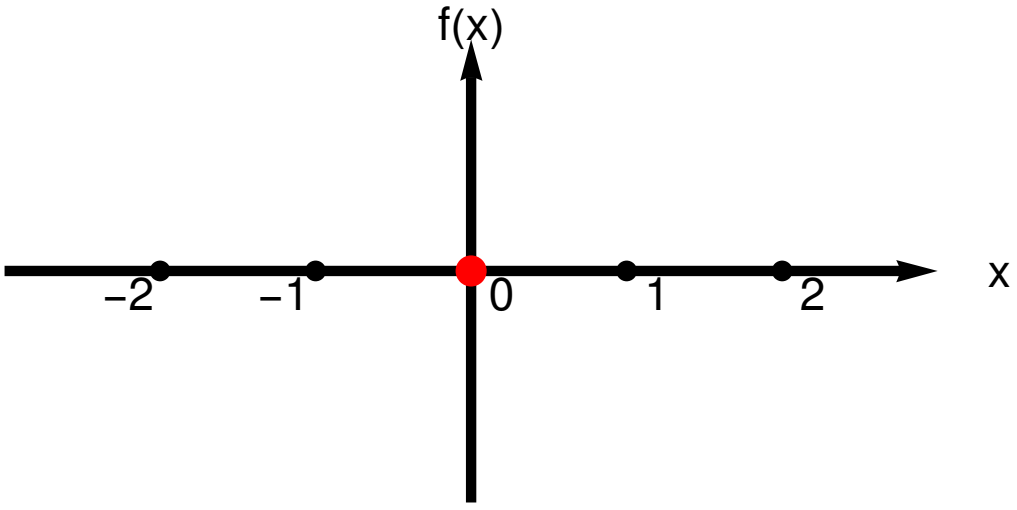
MATH 1A

Unit 12: Worksheet

Problem 1: Let $f(x) = x^3 - 12x$.
a) Find all critical points of f.
b) Use the first derivative test to find the maxima and minima.
c) Use the second derivative test to find maxima and minima.
d) Now use this information to draw the graph of f.



Problem 2: Find the maxima and minima of the function $f(x) = 3|x| - x^3$ following the same path as in the previous problem. To get started, first look at what happens for $x > 0$ and then for $x < 0$.



Problem 3:
You see the graph of a continuous function f. It is called the **Big W** function.

a) identity the intervals where f is increasing
b) identify the intervals where f is decreasing.
c) identify the intervals where f is concave up.
d) identify the intervals where f is concave down.
e) Which points are critical points of f?
f) Which points are local maxima?
g) Which points are local minima?