

# The Mean Value Theorem

## Problem 1

Find the value(s) of  $c$  that will satisfy  $\frac{f(b)-f(a)}{b-a} = f'(c)$  for the function  $f(x) = x^3 - x^2$  on the interval  $[-1, 2]$ .

## Problem 2

Suppose that  $f(x)$  is continuous and differentiable on the interval  $[-5, 0]$ . We also know that  $f(-5) = -4$  and that  $f'(x) \leq 2$ . What is the largest possible value for  $f(0)$ ?