

Name: \_\_\_\_\_

Math 231 Quiz 4

1. (10 pts) Find the absolute maximum and absolute minimum of  $f$  on the given interval.

$$f(x) = 2x^3 - 3x^2 + 4, \quad [-1, 2].$$

2. (10 pts) Find all numbers  $c$  that satisfy the conclusion of the mean value theorem on the given interval.

$$f(x) = x^3 - 3x + 2, \quad [-2, 2].$$

**Bonus.** (2pts) Use the mean value theorem to show that  $x > \sin x$  holds for all  $x > 0$ .  
*Hint: show that  $f(x) = x - \sin x > f(0) = 0$  for  $x > 0$ .*