

Calculus BC: Classwork on 3.1 - 3.2

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Pd: \_\_\_\_\_

1. Find all critical number(s) of  $f(x) = -8x^3 - 3x^2 + 18x + 19$ .
2. Find all critical points of  $f(x) = |2x + 5|$ .
3. Find all critical points of  $f(x) = \frac{x^2}{2x - 4}$ .
4. Find the minimum of  $p(x) = -4x^3 - 3x^2 + 18x + 19$  over  $[-2, 2]$ .
5. Find the maximum of :  $f(x) = \frac{x^2}{3x - 1}$  over  $[3, 5]$ .
6. Verify that  $p(x) = -3x^2 - 12x - 15$  over  $[-4, 0]$  satisfies Rolle's Theorem, then find all numbers  $c$  that satisfy the conclusion of Rolle's Theorem.
7. Verify that  $h(x) = \sin x$  over  $[-5\pi/2, -\pi/2]$  satisfies Rolle's Theorem, then find all numbers  $c$  that satisfy the conclusion of Rolle's Theorem.
8. Verify that  $g(x) = -x^2 - 2x - 4$  over  $[1, 2]$  satisfies the Mean Value Theorem, then find all numbers  $c$  that satisfy the conclusion of the Mean Value Theorem.