

Instructions: Please work the following problems on other pieces of paper. You must show all work and calculations in order to receive full credit. I would prefer to collect your assignments in class on the day it is due, but I will accept it as late as 5:00 PM on the due date. Assignments submitted later will receive 50% credit.

1. Determine the absolute extrema of the function $f(x) = x^4 - 8x^3 + 6x^2 + 40x - 15$ on the interval $[-3, 3]$. Write your answer as ordered pairs. *Hint:* $x^3 - 6x^2 + 3x + 10 = (x + 1)(x - 2)(x - 5)$.
2. Section 5.4 # 22.
3. Section 5.4 # 32.
4. Section 5.4 # 36.
5. Let $f(x) = \frac{x + 3}{(x - 2)^2}$. Determine the absolute extreme of f on the interval $(-10, 0)$. Write your answer as an ordered pair, and indicate whether it is an absolute maximum or an absolute minimum.
6. Section 5.5 # 20. In addition, determine what the minimum cost is.
7. Section 5.5 # 22. In addition, determine what the maximum volume is (round your answer to 2 decimal places).