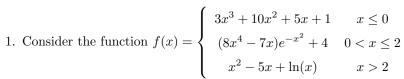
Please turn in a paper copy and SHOW YOUR WORK!



Be careful! Wolfram Alpha has a hard time interpreting commands applied to this function. You may want to deal with the function one piece at a time.

- (a) Find all of the critical points of f(x). x =
- (b) Restricting our attention to the interval [-3, 5]...

The maximum value of f(x) is ______. This occurs when x = _____.

The minimum value of f(x) is ______. This occurs when x = _____.

2. Todd's Rentals (located in Todd, NC) rents heavy duty pressure washers. Each washer costs \$800. Over time Todd has found that a typical pressure washer will require \$50 of repairs during its first year of operation, \$140 of repairs during its second year of operation, and \$305 of repairs during its third year of operation.

Use Excel to find a power model for the **average** annual repair costs. Then model the average annual cost of operating a pressure washer using a function of the form: $A(t) = \frac{C}{t} + Rt^r$ where C is the cost of purchasing the TV and Rt^r models the repair costs.

$$A(t) = \underline{\hspace{1cm}}$$

When t =_____, A(t) is minimized. [Keep 5 decimal places.]

Todd should replace his pressure washers every ______ years and _____ months. [Round up to the next whole month.]

If he does this, his average annual cost (per washer) should be \$ _____.

- 3. Stacy runs a small fruit stand just outside of Boone. She pays \$1.25 per carton of blueberries and has found that her average storage cost is 0.25 per carton per year (base inventory costs on average inventory making all of the standard assumptions). Suppose Stacy is charged \$20 every time she places an order. Let C(x) be Stacy's annual cost function.
 - (a) If Stacy sells 1200 cartons each year, C(x) =

Her **ideal** EOQ is $_$ and her **ideal** minimum annual cost is $_$.

(b) If Stacy sells 150 cartons each year, C(x) =

Her ideal EOQ is _____ and her ideal minimum annual cost is _____.

(c) Suppose that Stacy sells 2000 cartons per year and gets a small discount if she places a large order. For orders of 1500 or more blueberry cartons, she pays \$1.12 each. However, her shipping costs double to \$40 for a large shipment and her inventory costs double to \$0.50 per carton as well.

Cindy's ideal EOQ is _____. Her ideal minimum annual cost is _____.