Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel
Exercises for Section 3.6

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1. (1 pt)
Find the critical points of the function $f(x) = 6x^3 - 17x + 5$. Enter the points in increasing order; leave any unused answer boxes blank.

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2. (1 pt)
Find the critical points of the function $f(x) = 11x^2 + \frac{6}{x^2}$. Enter the points in increasing order; leave any unused answer boxes blank.

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3. (1 pt)
Find the derivative and critical points of the function $f(x) = \frac{8x+18}{6x+11}$.

$f'(x) =$ __________

Enter the critical points in increasing order; leave any unused answer boxes blank.

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4. (1 pt)
Find the critical points of the function $f(x) = 8x^3 - 2x^2 + 4$. Enter the critical points in increasing order; leave any unused answer boxes blank. For each point, determine whether it is a local **min**, **max**, or **neither**, and enter one of these three words in the adjacent box.

$x =$ __________ —— **min**, **max**, or **neither**: _____

$x =$ __________ —— **min**, **max**, or **neither**: _____

$x =$ __________ —— **min**, **max**, or **neither**: _____

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5. (1 pt)
Find the greatest possible product xy given that x and y are both positive integers and $x + y = 64$.

$xy =$ __________

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6. (1 pt)
Find the area of the largest rectangle that can be made with perimeter 56.

Area = __________

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7. (1 pt)
A rectangular lettuce patch, 480 square feet in area, is to be fenced off against rabbits. Find the least amount of fencing required if one side of the land is already protected by a barn.

Fencing needed = __________ feet

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8. (1 pt)
A rectangular field is to be fenced off and divided in two by another fence parallel to one side of the field. If 448 feet of fencing is to be used, what is the maximum area that can be enclosed?

Area = __________ square feet