

MA104 Lesson 19

SOLVING OPTIMIZATION PROBLEMS III

Thursday, 14 February, 2008

Outline

- 1 Quiz
- 2 Last Class
- 3 SOLVING OPTIMIZATION PROBLEMS III
 - Course Guide
 - SOLVING OPTIMIZATION PROBLEMS III
 - Definitions
 - An Example
 - Do Problem - Help
 - The Dreaded Thayer Board Work
- 4 Look Forward - IMPLICIT DIFFERENTIATION
 - Course Guide

Quiz

$f(x) = x^4 - 6x^2 + 3$ on the interval $-3 \leq x \leq 2$

- 1 find the smallest critical point?
- 2 what is the value of $f(x)$ at the smallest critical point?
- 3 classify the smallest critical point.
- 4 find the middle critical point?
- 5 what is the value of $f(x)$ and the middle critical point?
- 6 classify the middle critical point
- 7 find the largest critical point?
- 8 what is the value of $f(x)$ as the largest critical point?
- 9 classify the largest critical point
- 10 what is the value of x at the Global Maximum?
- 11 what is the value of $f(x)$ at the Global Maximum?

A box with a square base and an open top must have a volume of 32,000 cm cubed. Find the dimensions of the box that minimize the amount of material used. For example if your base is 15 input 15. Don't put in units!

- 1 What is the base of the box?
- 2 What is the height of the box?
- 3 what is the amount of material used?

Admin

- 1** Fundamentals of Derivative participants will take the make-up on Friday during normal class time. Come to my office during the normal class time to receive the make-up. Anyone can take this make-up to strengthen their derivative skills.
- 2** Fish Fry - Shuttle from Grant Turn-Around on the hour from 1700-1900. Cost \$12, Tilapia and Whiting.

SOLVING OPTIMIZATION PROBLEMS II

Questions?

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Objectives

- 1** Model and solve optimization problems.

READ

I Stewart: Section 4.7, pages 322-327.

DO Problems

I Section 4.7/ 30, 36, 38

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Definitions

- 1 Steps in solving optimization problems - pg 322
 - 1 Understand the problem
 - 2 Draw a diagram
 - 3 Introduce Notation
 - 4 Express Q
 - 5 Find a relationship
 - 6 Find absolute Max or Min

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An Example

Example Problem

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Do Problem - Help

Section 4.7/ 30, 36, 38

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Board Work

1 Board Problems

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LESSON 22 - IMPLICIT DIFFERENTIATION

1 OBJECTIVES:

- 1 Understand what is meant by implicitly and explicitly defined functions.
- 2 Use the method of implicit differentiation to find the derivative of implicitly defined functions.

2 READ:

- 1 Stewart: Section 3.5, pages 207-211 (Stop at Derivatives of Inverse Trig Functions).
- 2 Student Notes.

3 THINK ABOUT:

- 1 Why is it sometimes necessary to use implicit differentiation?

4 DO:

- 1 Section 3.5/ 1, 5, 9, 10, 25, 38

Questions?

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