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4. Classic problems

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Recitation due Sep 13, 2021 20:30 IST Completed

Practice

Maximize the volume

3/3 points (graded)

We want to build a 3-dimensional rectangular box with side lengths x, y, and z. Suppose we want our box to enclose the largest possible volume, but we are required to pick side lengths that satisfy $x + y + z = 21$. What side lengths x, y, z should we choose?

$x =$ 7 ✔ **Answer:** 7

$y =$ 7 ✔ **Answer:** 7

$z =$ 7 ✔ **Answer:** 7

Solution:

We invite you to share your solution (using Lagrange multipliers) on the forum, or to compare your solution to someone else's posted answer!

Submit You have used 1 of 25 attempts

Answers are displayed within the problem

A new constraint

3/3 points (graded)

We want to build a 3-dimensional rectangular box with side lengths x, y, and z. Suppose we want our box to enclose the largest possible volume, but we are required to pick side lengths that satisfy $4x + y + z = 24$. What side lengths x, y, z should we choose?

$x =$ 2 ✔ **Answer:** 2

$y =$ 8 ✔ **Answer:** 8

$z =$ 8 ✔ **Answer:** 8

Solution:

We invite you to share your solution (using Lagrange multipliers) on the forum, or to compare your solution to someone else's posted answer!

Submit You have used 1 of 25 attempts

Answers are displayed within the problem

4. Classic problems

Topic: Unit 3: Optimization / 4. Classic problems

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Code for this Problem I used Python and the Sympy package to solve this problem. Here is my solution! x,y,z,L = sympy.symbols('x,y,z,lambda') V = x*y*z ... Pinned	4
My Maximize the Volume Part 1 Solution	4
My solutions to part 1 & part 2	1
My Solution to Part 1	4
Arithmetic-geometric Mean Inequality and Cauchy Inequality Does this have anything to do with Cauchy Inequality? I feel there's some similarity between them. (two parallel vectors) Also, I foun...	6
my solution (recitation 11)	5
Lagrange multiplier for higher dimensions !? Of course, the same method applies also for 3 variables. But the course mentioned for 2 variables only, so it is wrong to assume it wi...	2
solving part 2 using part 1	2
My Solution to Part 2	1
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23 min + 8 activities

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