



Bookmarks

▸ General Information

▸ Week 1

▸ Week 2

▸ Week 3

▸ Week 4

▸ Week 5

▼ Week 6

Lecture

Lecture questions due Oct 18, 2016 at 19:30 IST

**Recitation****Problem Set 6**

Homework 6 due Oct 18, 2016 at 19:30 IST



Week 6 > Recitation > Problem 3

Problem 3

🔖 Bookmark this page

PART A

0 points possible (ungraded)

Consider the following second-order cone programming problem:

$$\begin{array}{ll}
 \min & t \\
 \text{s.t.} & \\
 & \|x\|_2 \leq t \\
 & x_1 + x_2 \geq 1 \\
 & 0 \leq x_i \leq 1, i \in \{1, 2\}
 \end{array}
 \left. \vphantom{\begin{array}{l} \min \\ \text{s.t.} \end{array}} \right\}$$

You can solve using spreadsheet optimization or using Julia. If you use Julia, you will need the following additional syntax:

```

Pkg.add("ECOS")
@constraint(yourModelVariable, soc,norm2{x[i], i=start:end} [insert inequality] t)
yourModelVariable=Model(solver=ECOSSolver())
@show getvalue(variable of interest)

```

To two decimals, what is the optimal objective value?

[Exit Survey](#)

0.71

✓ Answer: 0.71

0.71

Solution

See R6_P3_sol.ipynb for the Julia solution

See R6P3_sol.xlsx for the Excel solution

Note that one can solve this without any software. The best solution occurs when

$$x_1 = x_2 = 1/2 \text{ and } t = (1/4 + 1/4)^{.5} = \frac{1}{\sqrt{2}} = .5\sqrt{2}.$$

Submit

✓ Correct

© All Rights Reserved



© 2016 edX Inc. All rights reserved except where noted. EdX, Open edX and the edX and Open EdX logos are registered trademarks or trademarks of edX Inc.

POWERED BY
OPENedX®



