C477: Computing for Optimal Decisions
Mentimeter Quiz 1

10-10-2016

Exercise 1 (1-Norm)**.** Does one of the paths in Slide 14 of *Intro to Optimisation* represent the 1-Norm?
Yes; Path 1

Exercise 2 (2-Norm)**.** Does one of the paths in Slide 14 of *Applications-Based Intro to Optimisation* represent the 2-Norm?
Yes; Path 3

Exercise 3 (Infinity-Norm)**.** Does one of the paths in Slide 14 of *Applications-Based Intro to Optimisation* represent the Infinity-Norm?
No; none of these paths are the infinity norm

Exercise 4 (Boundary Points)**.** Which of the following are boundary points?

0.2 with respect to the set $\{0, 1\}$	*Not a boundary point*
1.0 with respect to the set $[0, 1]$	*Boundary point*
0.0 with respect to the set $(0, 1)$	*Boundary point*
0.3 with respect to the set $[0, 1]$	*Not a boundary point*
1.0 with respect to the set $\{0, 1\}$	*Boundary point*

Exercise 5 (Interior Points)**.** Which of the following are interior points?

0.2 with respect to the set $\{0, 1\}$	*Not an interior point*
1.0 with respect to the set $[0, 1]$	*Not an interior point*
0.0 with respect to the set $(0, 1)$	*Not an interior point*
0.3 with respect to the set $[0, 1]$	*Interior point*
1.0 with respect to the set $\{0, 1\}$	*Not an interior point*

Exercise 6 (Closed Set)**.** Which of the following are closed sets?

$\{0, 1, 2, 3\}$	*Closed set*
$[0, 1]$	*Closed set*
$(0, 1)$	*Not a closed set*
$(0, 1]$	*Not a closed set*

Exercise 7 (Open Set)**.** Which of the following are open sets?

$\{0, 1, 2, 3\}$	*Not an open set*
$[0, 1]$	*Not an open set*
$(0, 1)$	*Open set*
$(0, 1]$	*Not an open set*

Exercise 8 (Bounded Set)**.** Which set on Slide 12 of *Mathematical Intro to Optimisation* is bounded?
Picture on the left only.

Exercise 9 (Global versus Local optima)**.** Characterise x_1 on Slide 14 of *Mathematical Intro to Optimisation*?
Both a local and a global maximum.

Exercise 10 (Strict local maximum)**.** Identify a local maximum which is not a strict local maximum on Slide 14 of *Mathematical Intro to Optimisation*?
x_5

Exercise 11 (Global minimum value)**.** What is the global minimum value of the function on Slide 14 of *Mathematical Intro to Optimisation*?
$f(x_4)$

Exercise 12 (Argmin)**.** What is the argmin of the function on Slide 14 of *Mathematical Intro to Optimisation*?
x_4