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2. Gradients and optimization

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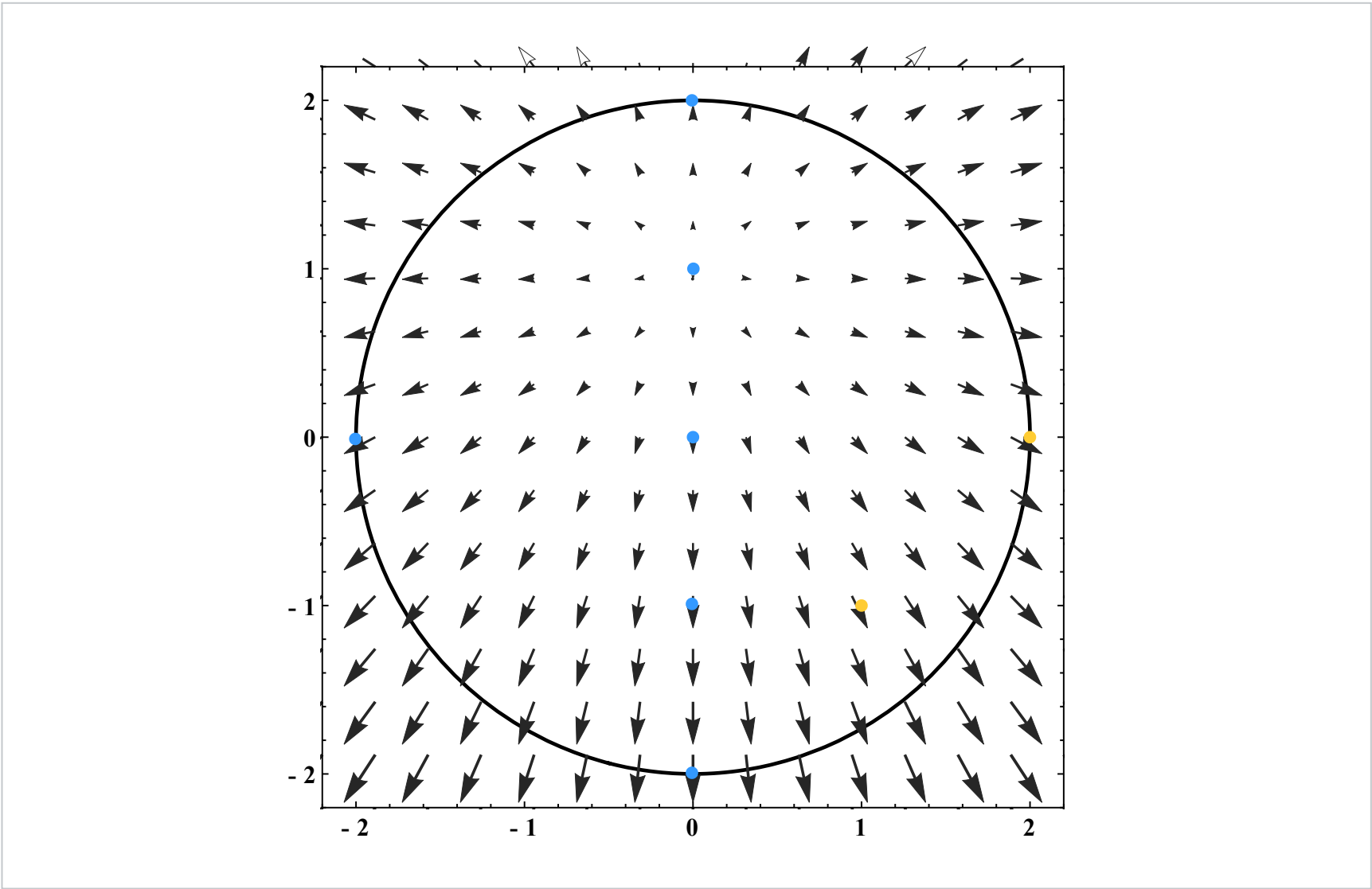
Problem Set A due Sep 13, 2021 20:30 IST Completed



Practice

2(a)

1/1 point (graded)
Here is a picture of the gradient of a function f . Let R denote the region inside and on the boundary of the circle.



If you start at the point $(1, -1)$ and move slightly to the right, how does the value of f change?

- ☒ it increases
- ☐ it decreases
- ☐ it stays the same



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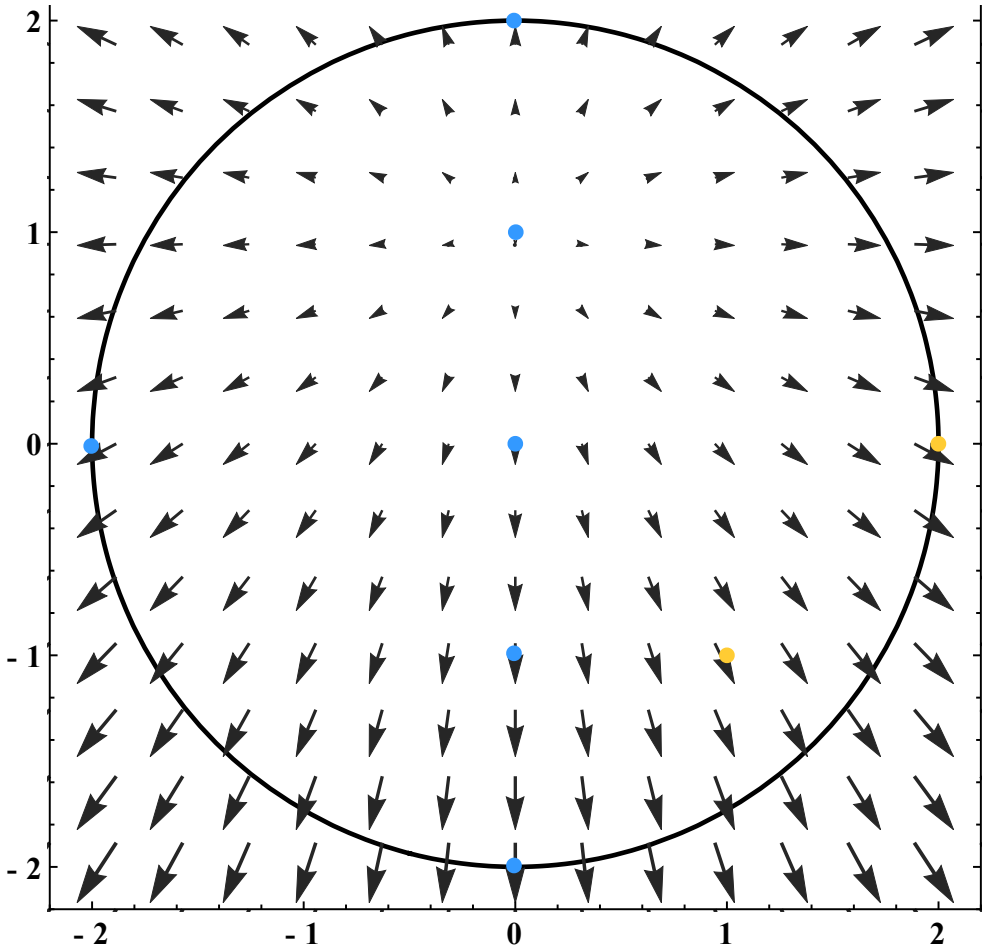
i Answers are displayed within the problem

2(b)

1/1 point (graded)
Here is a picture of the gradient of a function f . Let R denote the region inside and on the boundary of the circle.

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What is the approximate location of the minimum of the function f in the region R ? Choose the point that the minimum is closest to below.

- ☐ $(0, 0)$
- ☒ $(0, 1)$
- ☐ $(0, 2)$
- ☐ $(0, -1)$
- ☐ $(0, -2)$
- ☐ $(-2, 0)$



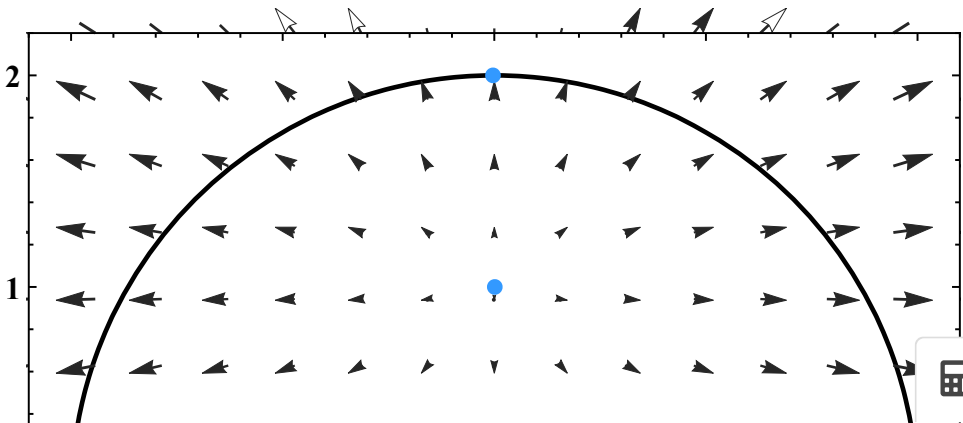
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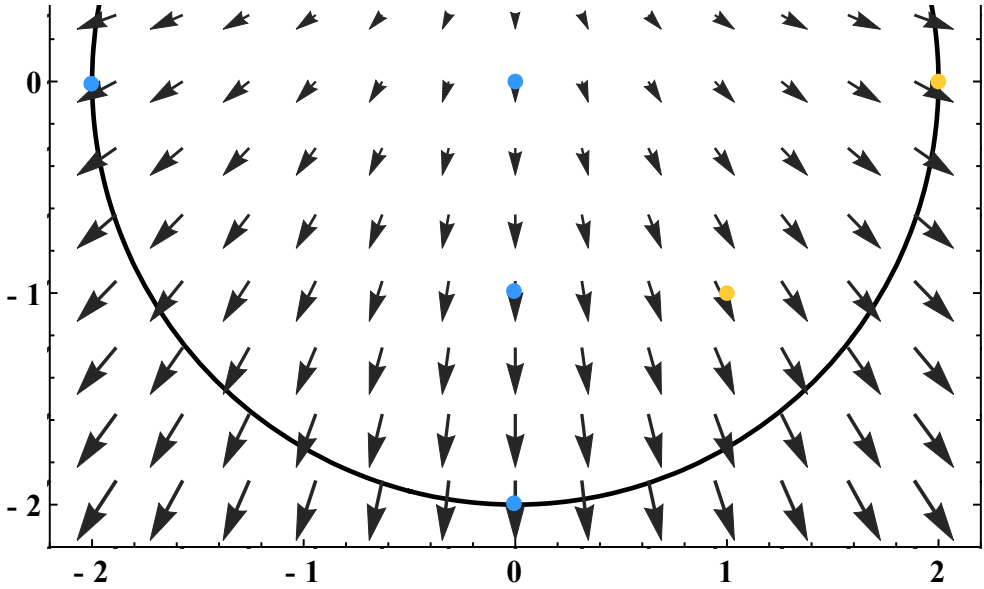
2(c)

1/1 point (graded)
Here is a picture of the gradient of a function f . Let R denote the region inside and on the boundary of the circle.



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If you start at the point $(2, 0)$ on the boundary of the circle, and follow the circle counterclockwise, does f increase, decrease, or stay the same?

- ☐ it increases
- ☒ it decreases
- ☐ it stays the same

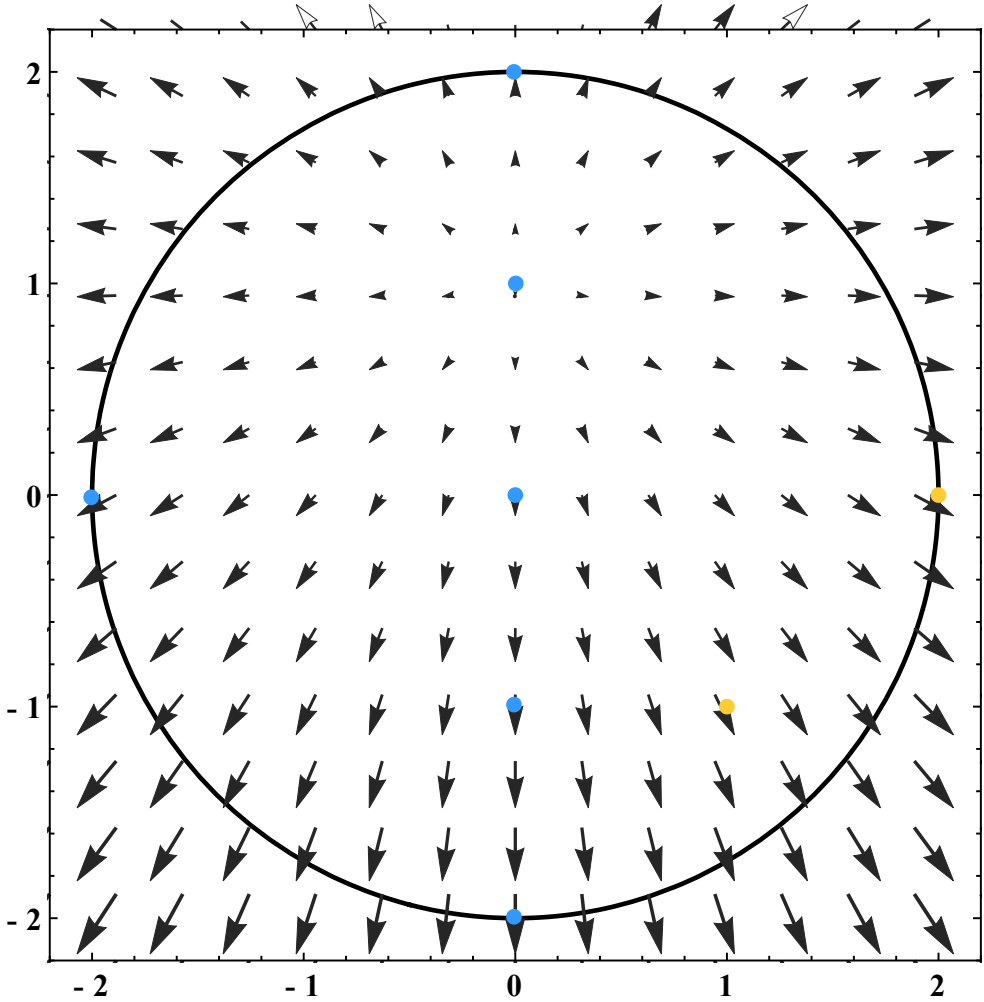


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2(d)

0/1 point (graded)
Here is a picture of the gradient of a function f . Let R denote the region inside and on the boundary of the circle.



If we follow the circle clockwise starting at the point $(2, 0)$ does f increase, decrease

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☐ it increases ✓

☒ it decreases

☐ it stays the same

✖

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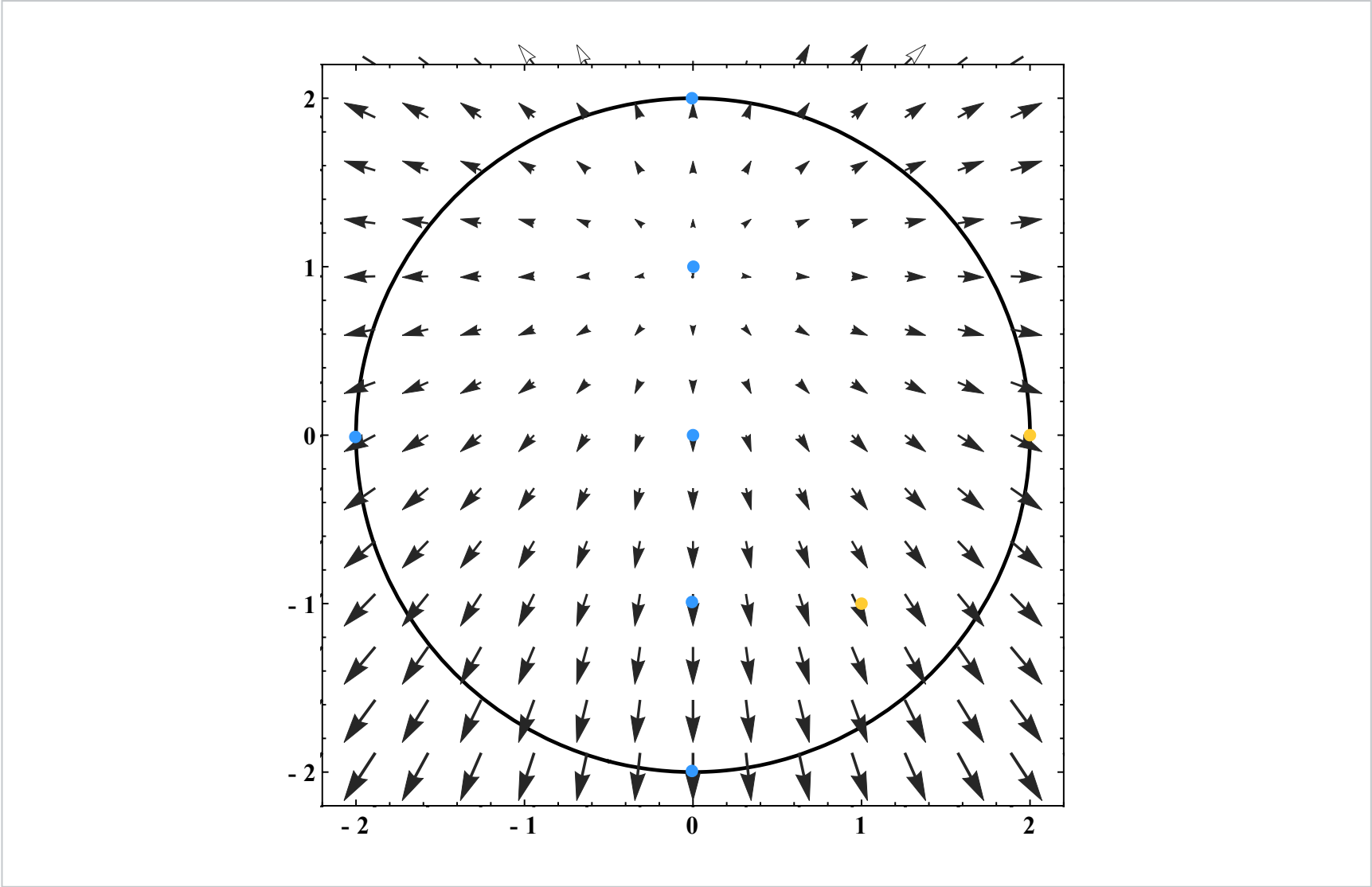
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2(e)

1/1 point (graded)

Here is a picture of the gradient of a function f . Let R denote the region inside and on the boundary of the circle.



What is the approximate location of the maximum of the function f in the region R ? Choose the point that the maximum is closest to below.

☐ (0,0)

☐ (0,1)

☐ (0,2)

☐ (0,-1)

☒ (0,-2)

☐ (-2,0)



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2. Gradients and optimization

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[Staff] 2(e) The definition of R may need to be amended

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