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1. Gradients

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Recitation due Aug 18, 2021 20:30 IST Completed

Practice

1.

1.0/1 point (graded)

Building on last week's recitation worksheet, we study the function $f(x,y) = xy$.

Compute $\nabla f(x,y)$.

(Enter a vector surrounded by square brackets; e.g. type `[1,0]` for $\langle 1,0 \rangle$.)

[y,x]

✔ **Answer:** [y,x]

Solution:

$\nabla f(x,y) = \langle f_x, f_y \rangle = \langle y, x \rangle$.

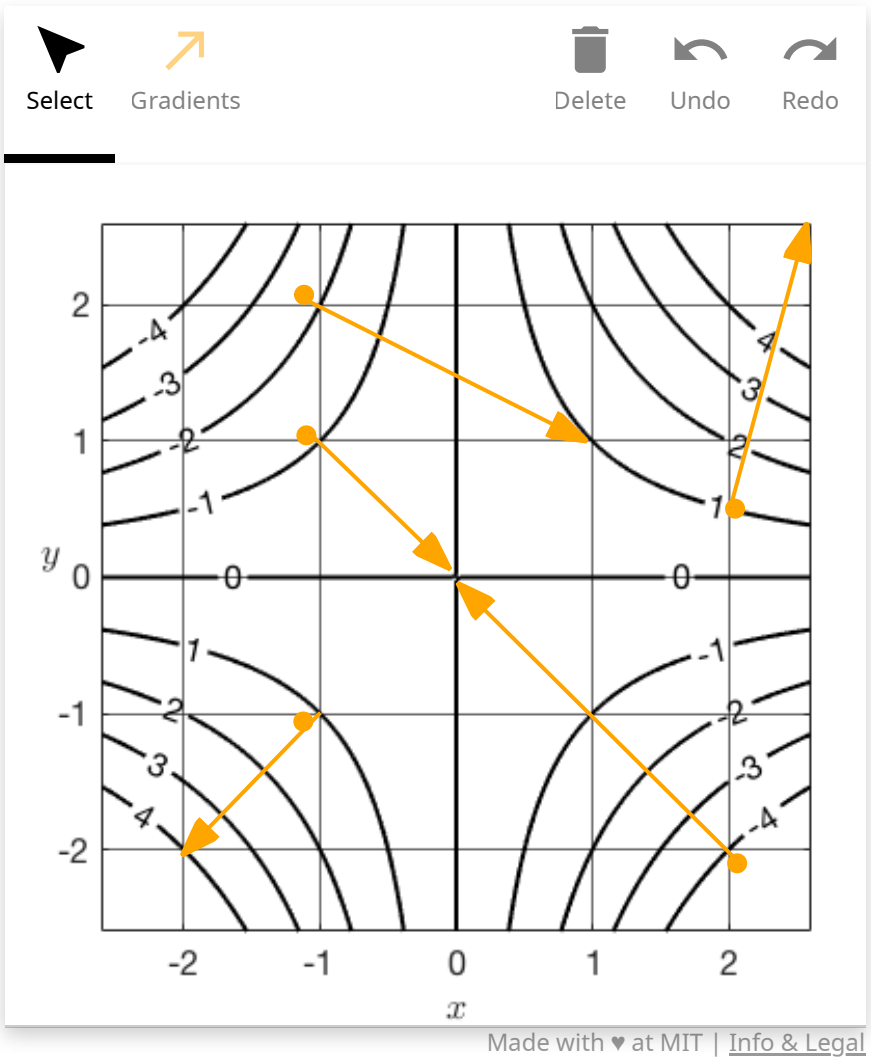
Submit You have used 2 of 15 attempts

Answers are displayed within the problem

2.

1.0/1 point (graded)

On the picture of the level curves of $f(x,y) = xy$ shown below, draw $\nabla f(x,y)$ at the points $(2, 1/2)$, $(-1, 1)$, $(-1, 2)$, $(2, -2)$, and $(-1, -1)$. When you draw $\nabla f(2, 1/2)$, put the start of the vector at $(2, 1/2)$, and similarly with the other points.



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Answer: See solution.

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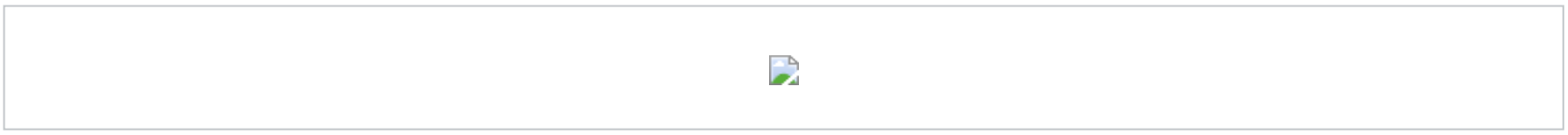
✔ Well done

Sanity check: we learned in class that the gradient is perpendicular to the level curves and point in the direction of steepest increase. Is that true for the vectors you drew?

Solution:



Submit You have used 3 of 25 attempts

Answers are displayed within the problem

3.

1.0/1 point (graded)

Let C be the curve $xy = 2$. Find a normal vector to the curve C at $(4, 1/2)$.

(Enter a vector surrounded by square brackets; e.g. type `[1,0]` for $\langle 1, 0 \rangle$.)

[1/2, 4] ✔ **Answer:** [1/2,4]

Submit You have used 1 of 15 attempts

Answers are displayed within the problem

4.

1.0/1 point (graded)

Find a point on the curve $xy = 1$ where the normal vector is parallel to $\langle 1, 2 \rangle$.

(Enter a point as an ordered pair surrounded by round parentheses; e.g. type `(1,0)` for $(1, 0)$.)

(sqrt(2), 1/sqrt(2)) ✔ **Answer:** (2/sqrt(2),1/sqrt(2))

Submit You have used 2 of 15 attempts

Answers are displayed within the problem

1. Gradients

Topic: Unit 2: Geometry of Derivatives / 1. Gradients

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? Staff Q.2 11
I keep getting the message below but I can't understand why - can you please look and see if I'm doing something wrong or if the gr...

? To the faculty
Hello dear faculty, My answers for all the problems in this page are correct except for #1, yet I know #1 is c...

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Strategy to Figure Out Q4 To find Q4 I used the following strategy: We know that xy=1, that the gradient of the f(x,y) = xy is the vector [y,x], and that the norm...		3
Stumped on Q4 I assume that I'm supposed to find a scalar multiple of <1,2>. Then I should select a point that is on the scalar multiple and the curve...		5
Isn't 2/sqrt(2) and sqrt(2) same? In my fourth answer I have used sqrt(2) at one place instead of 2/sqrt(2), yet the grader kept it showing wrong.		8
[STAFF] 2. For the level curve of xy=1, are the marker points at the wrong locations? For the level curve of xy=1, I think the marker points are at the wrong locations, can you please check? Also, I have no idea where i a... ★ Following		10
[staff] q4 disappeared I cannot see question 4 anymore. I was working on it, refreshed the page and the question just disappeared. it says could not format...		2
Q.4 Grader: watch out Community TA		4

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