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18. Computation checks

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Recitation due Aug 4, 2021 20:30 IST Completed

Practice

It turns out that the function whose level curves we have been analyzing in this recitation is defined by

$$T(x,y) = xy. \tag{2.36}$$

Complete the following computations and compare them to your answers on the previous page.

Compute partial derivatives

2/2 points (graded)
Given $T(x,y) = xy$, compute:

$T_x(x,y) =$ y ✔ **Answer:** y

$T_y(x,y) =$ x ✔ **Answer:** x

? INPUT HELP

Submit You have used 1 of 15 attempts

Answers are displayed within the problem

Evaluate partial derivatives 1

4/4 points (graded)
Using your answers for $T_x(x,y)$ and $T_y(x,y)$ above, compute the following:

$T_x(1,1) =$ 1 ✔ **Answer:** 1

$T_y(0,-1) =$ 0 ✔ **Answer:** 0

$T_y(-1,-1) =$ -1 ✔ **Answer:** -1

$T_y(1,0) =$ 1 ✔ **Answer:** 1

Discuss in the forum how these value relate to the change in temperature.

Submit You have used 1 of 15 attempts

Answers are displayed within the problem

Evaluate partial derivatives 2

4/4 points (graded)

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Using your answers for $T_x\,(x,y)$ and $T_y\,(x,y)$ above, compute the following:

$T_y\,(2,0) =$ 2 ✔ **Answer:** 2

$T_x\,(2,1) =$ 1 ✔ **Answer:** 1

$T_y\,(2,1) =$ 2 ✔ **Answer:** 2

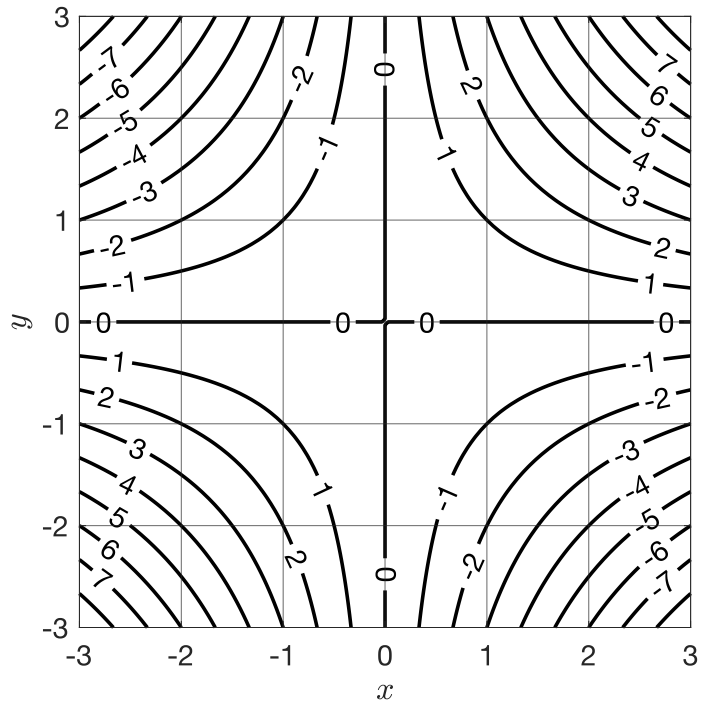
$T_x\,(0,1/2) =$ 1/2 ✔ **Answer:** 1/2

Submit You have used 1 of 15 attempts

Answers are displayed within the problem

Reflect

Question: Do your answers agree with your reasoning from the level curves from the previous page?



18. Computation checks

Topic: Unit 1: Functions of two variables / 18. Computation checks

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- Surprise suprise, the answers agree perfectly! — 2
  I really loved this exercise. Going to the graph, trying to reason where to go and how, then noticing the number of level curves I'm cr...
- Level Curves Reading Unclear but derivatives computation is straightforward — 1
  I found the level curves reading questions very tricky and unsound. I don't know how to see the relation between the computations a...
- Relation of Partial Derivative to Contour Plots — 3
  As you move along either the x- or the y-axis, the closer the level curves, the greater the magnitude of the derivative. Again, as you ...
- Typo? — 2
- Reflection — 1
  Yes, they do. As mentioned in the video, the closer together the contour lines are, the faster the change will be. With derivatives, th...
- Change of temperature — 1
  It's easy to spot some obvious correlation between curves when looking at the level curves plot when you have calculated partial de...
- mine do

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Yeah, taking these derivatives is easier than i thought it would be. and knowing calc i and ii, the whole concept of lines tangent to cu...

Reflection
They do; when we change x / y by one unit, we move exactly the same amount of level lines as the partial derivatives suggest. 4

[deleted]
[deleted] 2

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Next Up: Lecture 2: Linear approximations and tangent planes
41 min + 12 activities

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