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8. Gradients

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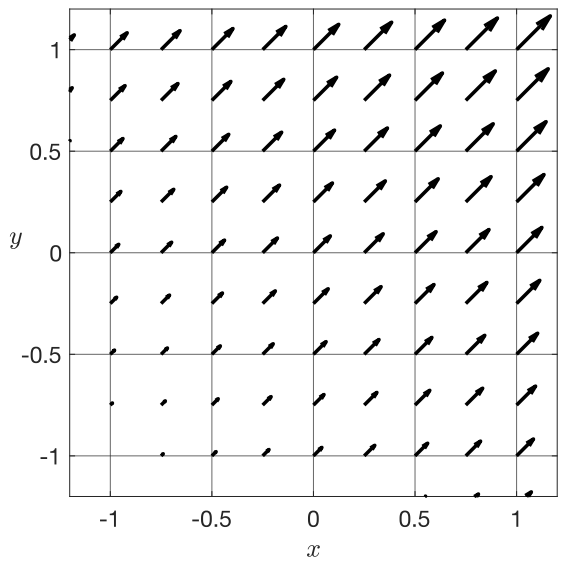
Problem Set A due Aug 18, 2021 20:30 IST Completed

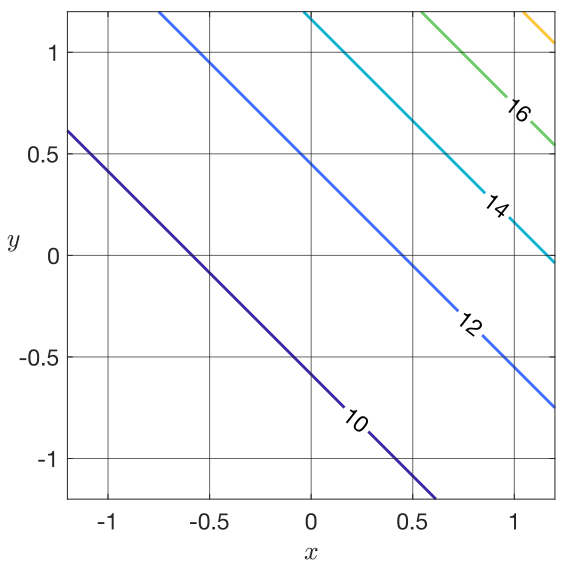
2A-10

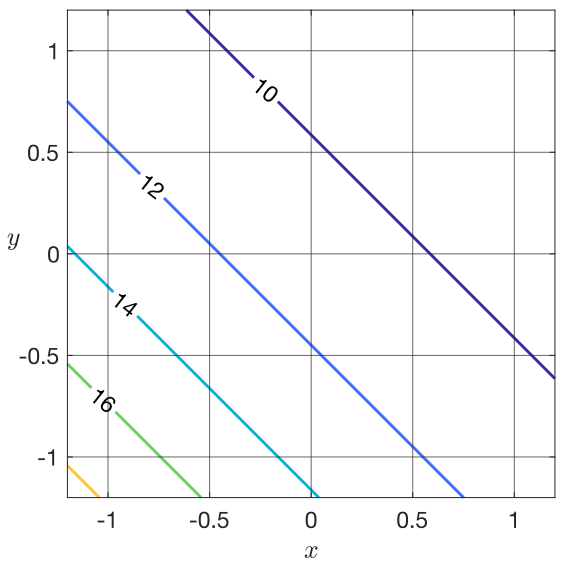
1/1 point (graded)

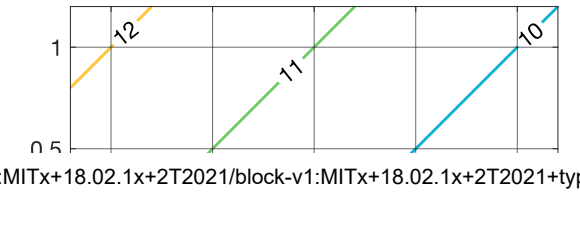
Here is a picture of ∇f.



In the picture, the gradient has been scaled. The true gradient is 60 times bigger – for instance at the point $(0.8, 0.8)$, the vector in the picture has length about 0.25 and $\nabla f\,(0.8, 0.8)$ has length about $60\,(0.25) = 15$. One of the following three pictures shows the level curves of f. Which one is it? Carefully think about your reasoning.







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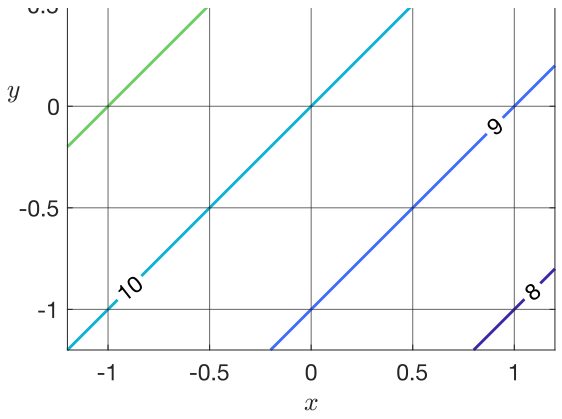

Solution:

The gradient is normal to the level curves, and the gradient is larger where the function is steepest, which is where the level curves are closest together.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

8. Gradients

Topic: Unit 2: Geometry of Derivatives / 8. Gradients

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? [Staff] Misstatement of approximation in problem statement 5

Perhaps not material but apparent length of gradient vector at (.8,.8) is more nearly 0.25.

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