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4. Level curves and curvature

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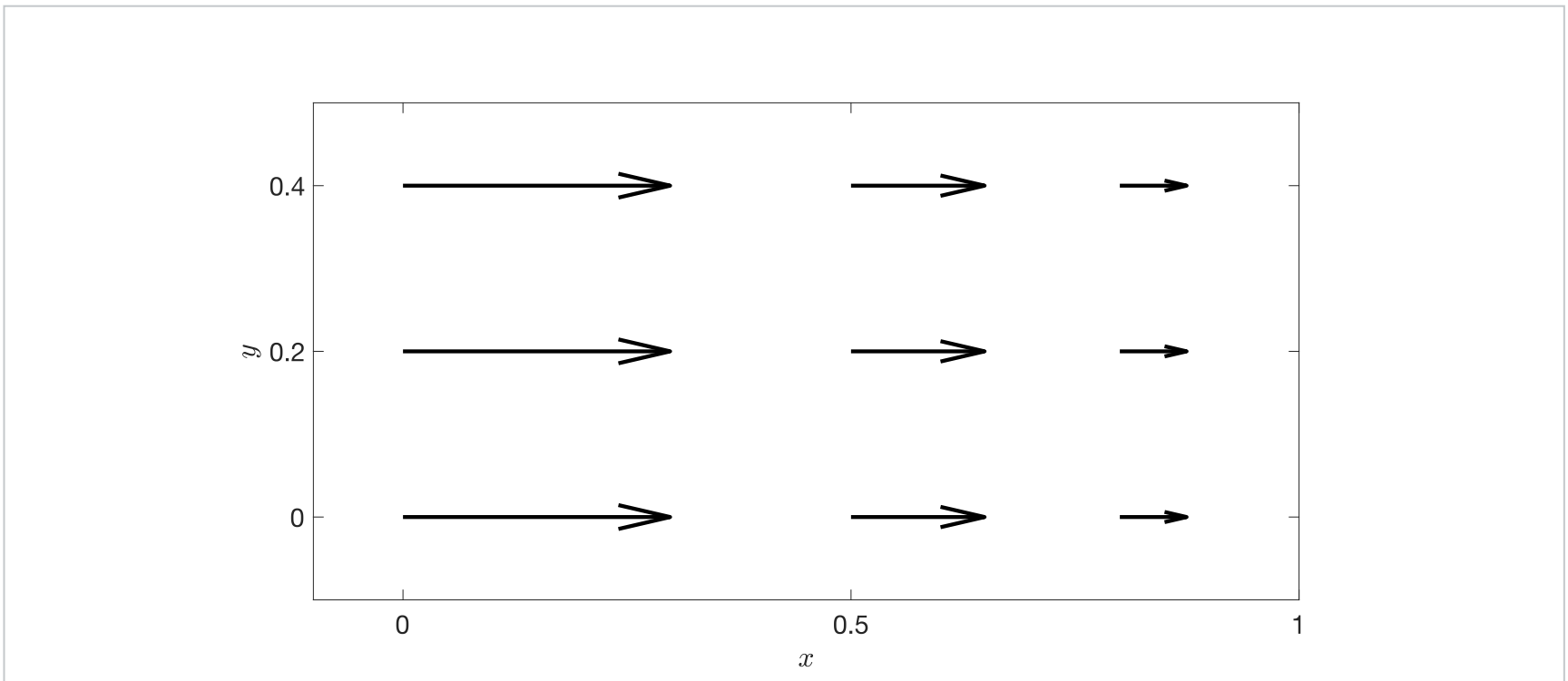
Recitation due Sep 13, 2021 20:30 IST Completed

Discuss

Changes in the gradient, part 1

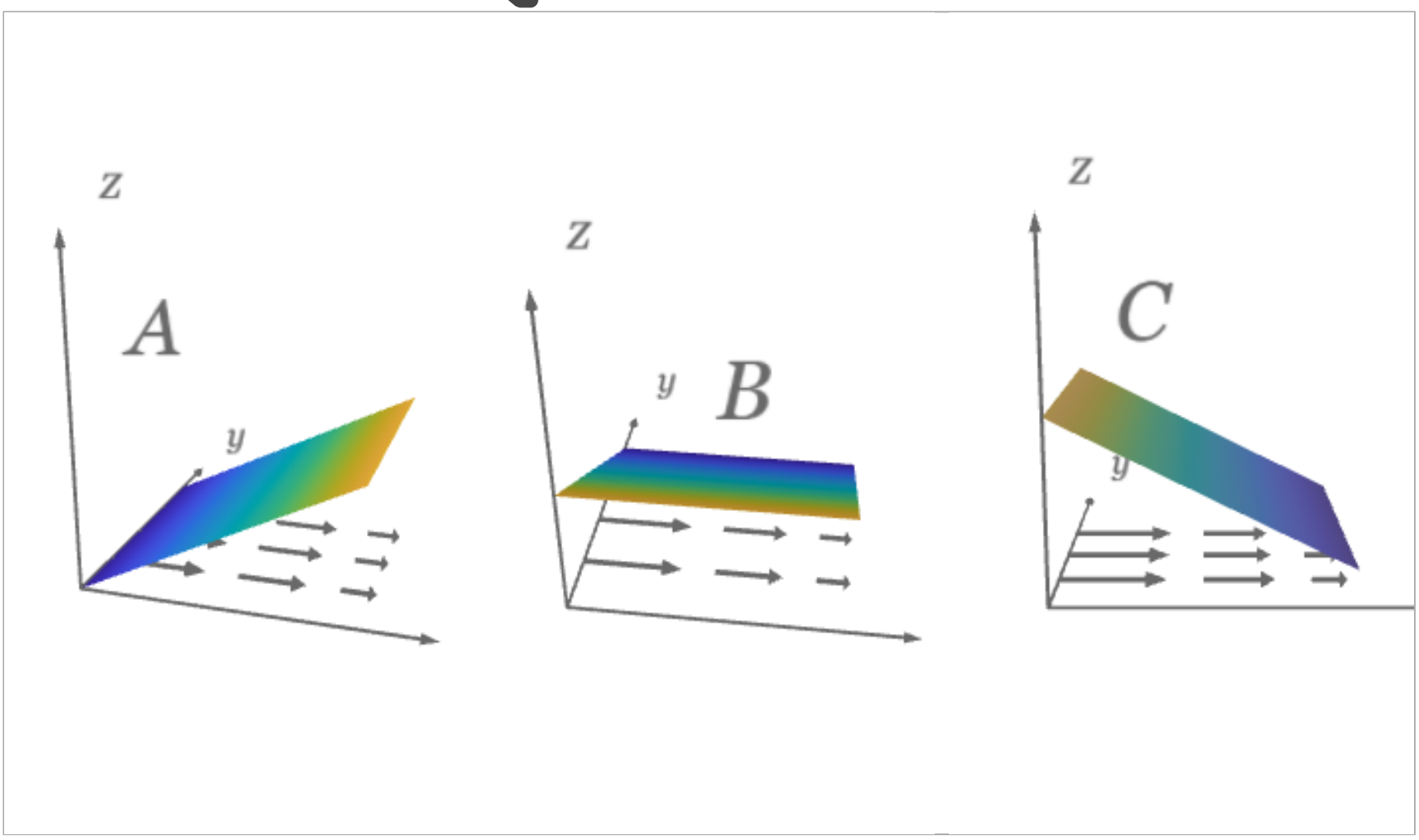
1/1 point (graded)

A function $f(x, y)$ has gradient ∇f shown below.



Which of the following images looks most like the linear approximation to the graph of the function $z = f(x, y)$?

▸ Planes approximating function



- A (plane whose height increases as x increases)
- B (plane whose level curves lie along gradients)
- C (plane whose height decreases as x increases)

✔

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Submit You have used 2 of 2 attempts

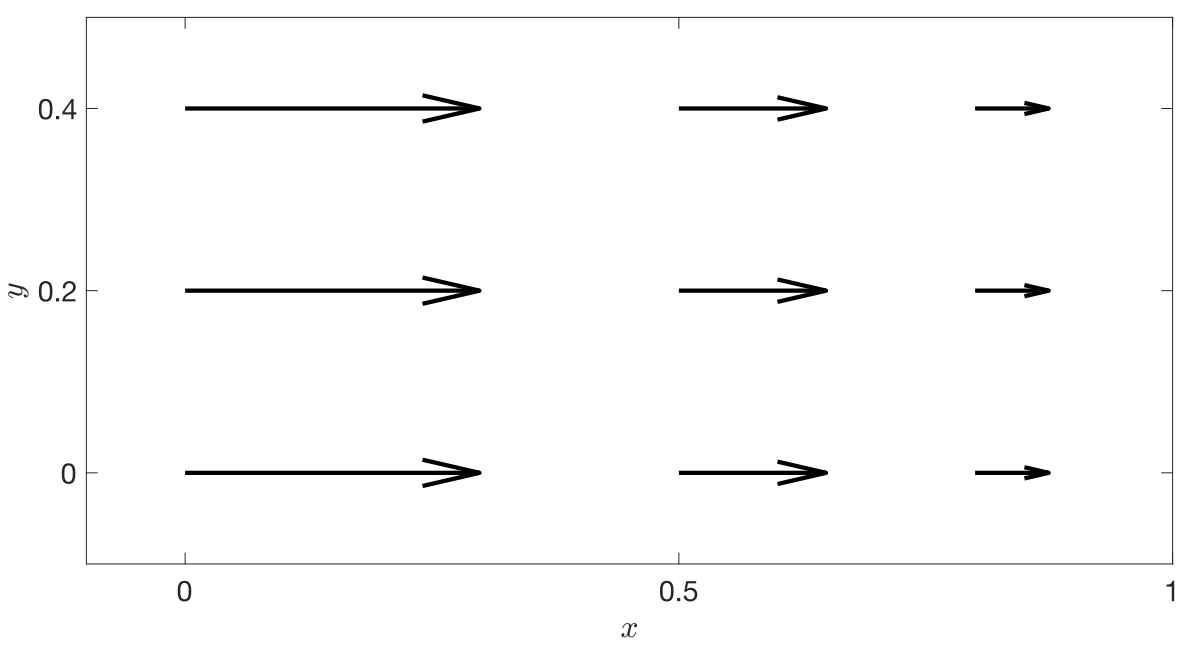
Answers are displayed within the problem

Changes in the gradient, part 2

1/1 point (graded)

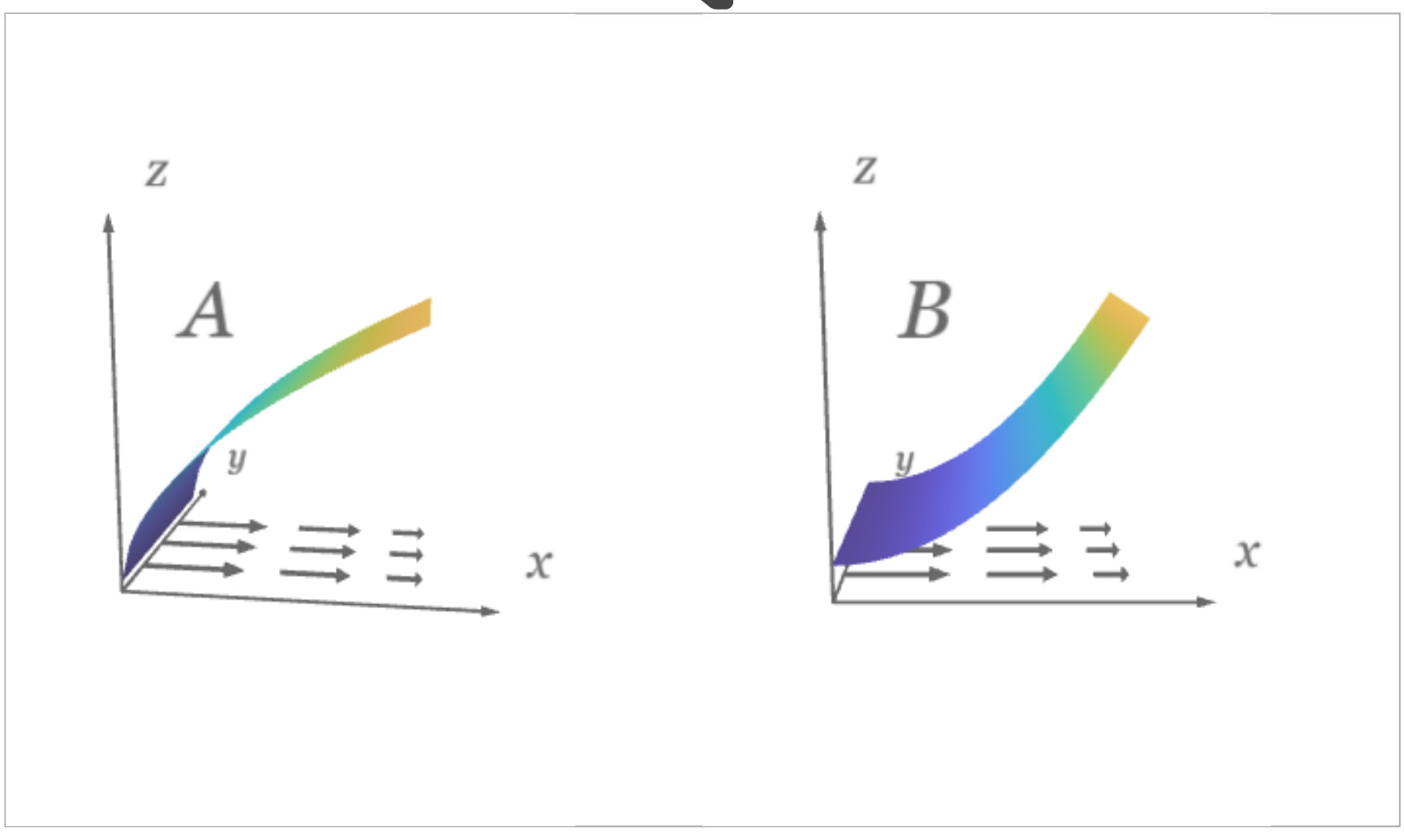
The previous question did not consider the lengths of the arrows of the gradient, which give us information about how steep the function is.

Given that the function $f(x, y)$ has gradient ∇f shown below,



which of the following images looks most like the graph of the function $z = f(x, y)$?

▶ Approximating the curvature of the function



- A (Steeper near $x = 0$ and becoming less steep as x increases)
- B (less steep near $x = 0$ and becoming steeper as x increases)

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Submit You have used 1 of 2 attempts

Answers are displayed within the problem

Changes in gradient magnitude and curvature

From the problems above, you can see that the direction of the gradient gives you information about the height of the function. The length of the gradient, or rather the changes in length of the gradient, give information about the curvature of the function.

- How might you systematically understand changes in the gradient?
- How can we use that information to understand the graph of a function better?

We will answer these questions in the next lecture! But please share you initial thoughts on the forum.

4. Level curves and curvature

Topic: Unit 3: Optimization / 4. Level curves and curvature

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Kindly extend the deadline for this unit. Kindly extend the deadline for this unit.this unit is difficult to grasp at first go.	7
[staff] number of attempts in "Changes in the gradient, part 2" Hello, In "Changes in the gradient, part 2" there's 2 options and 2 attempts. It's impossible to fail.	6
STAFF: Question about changes in gradient. part 1 Is there possibly a different map of the gradient that should have been used for part 1? As it stands, it seems incorrect. After reading...	6
Changes in gradient magnitude and curvature	6

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Next Up: Lecture 9: Second derivative test
65 min + 11 activities

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