

<u>Help</u>

sandipan\_dey >

<u>Course</u> <u>Progress</u> <u>Dates</u> <u>Calendar</u> <u>Discussion</u> <u>Notes</u>





Next >

3. Review curves

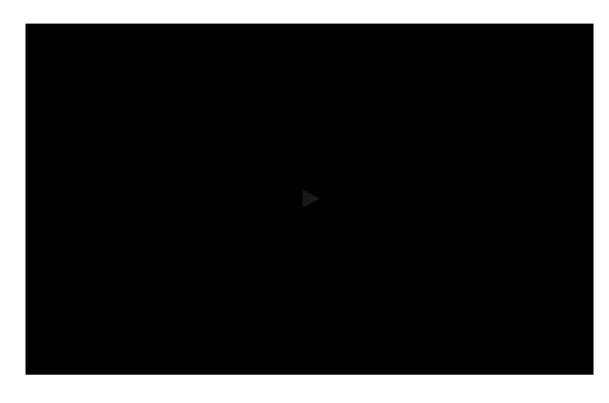
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Previous



# **Review**

### **Level curves question**



that if you have a function, then the gradient of the function is perpendicular to the level curves.

vveil, one thing that we learned is

Let me scribe that.

So here's something that we know. For any function g, the gradient of g is perpendicular to the level curves.

So if this curve C was a level curve of some function,

then we could use this method to find the normal vector.

So now I have a question for all of you.

C is a level curve of which function? Is it the function x squared?

Or is it the function y plus x squared?

Or is it the function x squared minus y?

## Video

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Consider the curve C, which is the parabola  $y=x^2$ . Find a normal vector to this parabola at the point (1,1).

We know that the gradient is normal to level curves. So if we can describe  $m{C}$  as the level curve of a function, we have a tool, the gradient, to find a normal vector.

# Which curve is the level curve?

0 points possible (ungraded)

The parabola  $y=x^2$  is a level curve of which of the following functions?



 $y + x^2$ 





#### Solution:

The parabola  $y=x^2$  can be written as the level curve of a function by moving all terms to one side. Subtracting a y from both sides we get  $0=x^2-y$ , thus the function  $x^2-y$  has the parabola  $y=x^2$  as a level curve of height 0.

(Also, see the video on the following page.)



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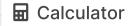
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