3. Review curves

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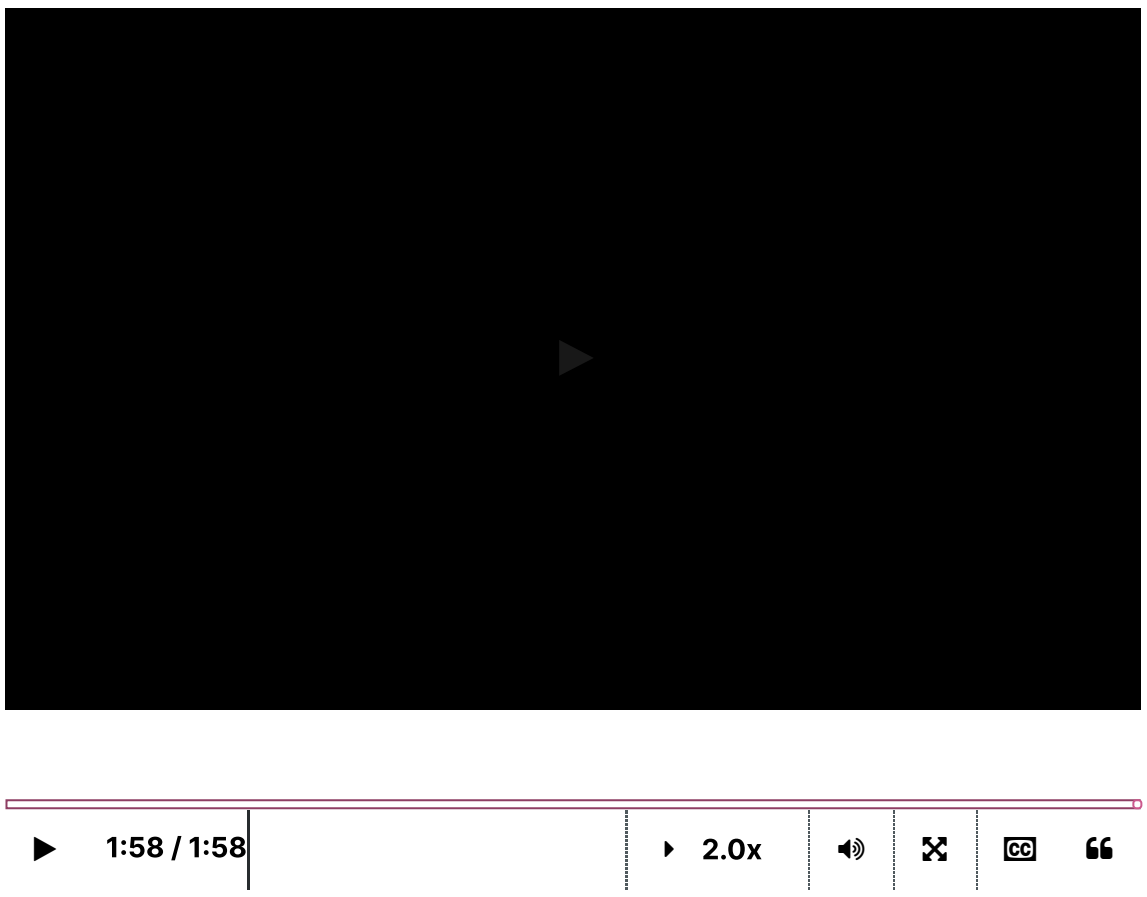
Review

Level curves question



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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 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?

- x^2
- $y + x^2$
- $x^2 - y$ ✔

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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