



Pre-university Calculus MOOC

Ervaringen en een preview

Fokko van de Bult

 TU Delft



Wat is een MOOC?

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- **M**assive: >10000 studenten

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- **O**nline
- **C**ourse: leerstof, oefeningen, interactie

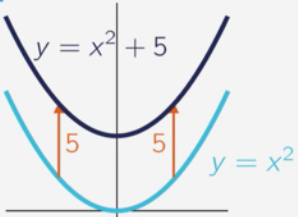
Hoe ziet een MOOC eruit

Hoe ziet een MOOC eruit

- Leerreeks
 - Filmpjes (<6 min)
 - Korte opgaven

2.3.2 scaling and translation

Vertical Translation: The graph of $g(x) + a$



$y = x^2 + 5$

$y = x^2$

$f(x) = x + 5$
 $g(x) = x^2$
 $f(g(x)) = x^2 + 5$

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1:30 / 5:32

A video player interface showing a lecture. On the right, a man with glasses and a striped shirt is speaking. The video content includes a slide about vertical translation of a parabola, showing the original function $y = x^2$ and the translated function $y = x^2 + 5$ with a vertical shift of 5 units. The slide also lists the functions $f(x) = x + 5$, $g(x) = x^2$, and $f(g(x)) = x^2 + 5$. The video player shows the TU Delft logo and a progress bar at 1:30 / 5:32.

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EXERCISE 1 (1 point possible)

In the following exercise calculate the derivative of the given function. Simplify your answer as much as possible.

$$f(x) = \ln(5x)$$

$$f'(x) =$$

Check

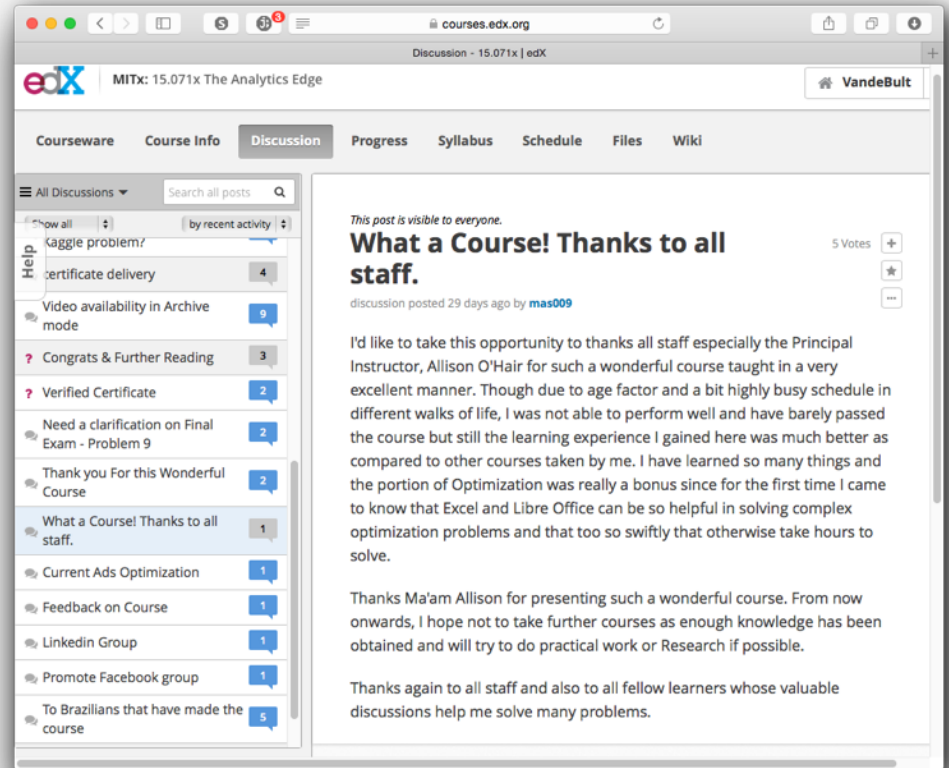
Save

Show Answer

You have used 0 of 5 submissions

Hoe ziet een MOOC eruit

- Leerreeks
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- Reeksen opgaven
- Forum



The screenshot shows a web browser window displaying a discussion forum on the edX platform. The page title is "MITX: 15.071x: The Analytics Edge" and the user "VandeBult" is logged in. The navigation menu includes "Courseware", "Course Info", "Discussion", "Progress", "Syllabus", "Schedule", "Files", and "Wiki".

The "All Discussions" sidebar on the left lists various topics with their respective vote counts:

- Help
- gaggle problem?
- certificate delivery (4)
- Video availability in Archive mode (9)
- Congrats & Further Reading (3)
- Verified Certificate (2)
- Need a clarification on Final Exam - Problem 9 (2)
- Thank you For this Wonderful Course (2)
- What a Course! Thanks to all staff. (1)
- Current Ads Optimization (1)
- Feedback on Course (1)
- Linkedin Group (1)
- Promote Facebook group (1)
- To Brazilians that have made the course (5)

The main content area shows a post titled "What a Course! Thanks to all staff." with 5 votes. The post text reads:

This post is visible to everyone.

What a Course! Thanks to all staff.

discussion posted 29 days ago by [mas009](#)

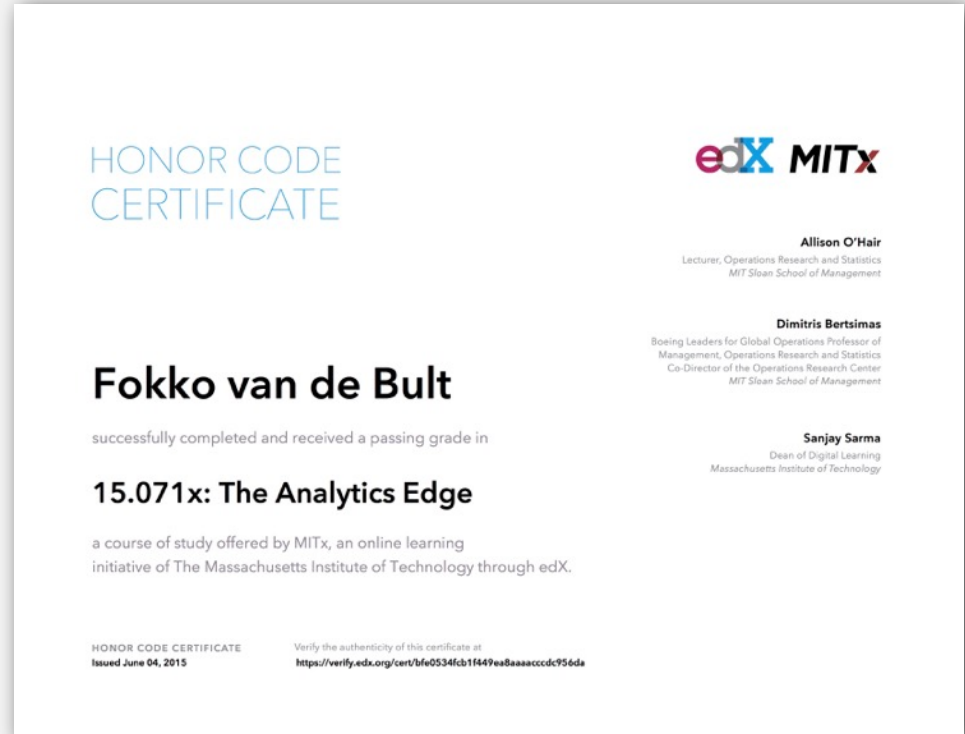
I'd like to take this opportunity to thanks all staff especially the Principal Instructor, Allison O'Hair for such a wonderful course taught in a very excellent manner. Though due to age factor and a bit highly busy schedule in different walks of life, I was not able to perform well and have barely passed the course but still the learning experience I gained here was much better as compared to other courses taken by me. I have learned so many things and the portion of Optimization was really a bonus since for the first time I came to know that Excel and Libre Office can be so helpful in solving complex optimization problems and that too so swiftly that otherwise take hours to solve.

Thanks Ma'am Allison for presenting such a wonderful course. From now onwards, I hope not to take further courses as enough knowledge has been obtained and will try to do practical work or Research if possible.

Thanks again to all staff and also to all fellow learners whose valuable discussions help me solve many problems.

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- Reeksen opgaven
- Forum
- Certificaat na afloop



Didactische overwegingen

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- Film > Tekst

Typen filmpjes: Khan style

Learn understanding inverse functions | Function inverses | Khan Academy

FUNCTIONS AND THEIR GRAPHS
Function inverses

Function inverses example 2
Function Inverses example 3
Inverses of linear functions
Algebraically finding inverses
Domain and range with inverse functions
Understanding inverses of functions
Understanding inverse functions
Understanding function inverses example

Understanding inverse functions
Total energy points 0 [Practice this concept](#)

x	$f(x)$
-9	5
-7	7
5	13
6	-7
9	8
11	12

$f(-9) = 5$
 $f(f^{-1}(5) + 1) = f(6) = -7$
 $f^{-1}(8) = 9$
 $f(f^{-1}(7)) = f(-7) = 7$

x	$f^{-1}(x)$
5	-9
7	-7
13	5
-7	6
8	9
12	11

Domain f Range
 f^{-1}

khanacademy.org

Typen filmpjes: Slides met tekst

courses.edx.org

Video 4: Bag of Words | Turning Tweets into Knowledge: An Introduction to Text Analytics | 15.071x Courseware | edX

Cleaning Up Irregularities

- Text data often has many inconsistencies that will cause algorithms trouble
- Computers are very literal by default – Apple, APPLE, and ApPLe will all be counted separately.
- Change all words to either lower-case or upper-case

Apple	APPLE	ApPLe	→	apple
apple	apple	apple		3

15.071x – Turning Tweets Into Knowledge: An Introduction to Text Analytics 3

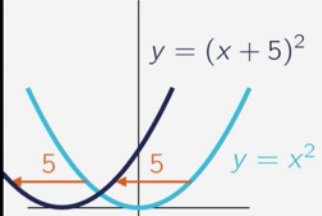
will be counted as the same word,
by either changing all words to uppercase or to lower case.
We'll typically change all the letters to lowercase,
so these three versions of Apple will all **become Apple with lower case letters** and will be counted as the same word.
Punctuation can also cause problems.
The basic approach is to deal with this is to remove everything that isn't a standard number

1:43 / 6:04 1.0x HD CC

Typen filmpjes: Mens naast slides

2.3.2 scaling and translation

Horizontal Translation: The graph of $g(x + a)$



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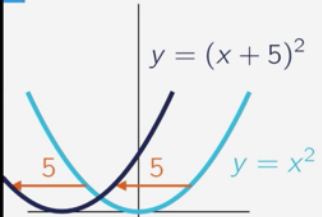
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1:50 / 5:02

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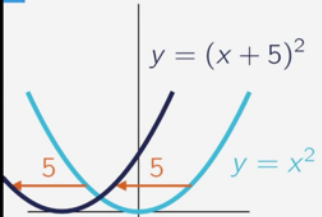
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 - IguanaTex (Windows)
 - LaTeXiT (OSX)

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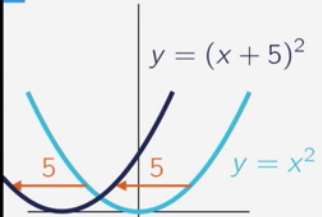
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- Smartboard is lastig

Opgaven in de MOOC

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- (Alles) moet nagekeken door computer

Suppose we are given the two functions $f(x) = x^2 + 2x + 3$ and $g(x) = 2x - 3$.

Determine both $f(g(x))$ and $g(f(x))$ in expanded form.

We have $f(g(x)) =$ ✓ $x^2 +$ ✓ $x +$ ✓

Opgaven in de MOOC

- (Alles) moet nagekeken door computer
- Geen Maple TA/TELMME e.d.

Suppose we are given the two functions $f(x) = x^2 + 2x + 3$ and $g(x) = 2x - 3$.

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Opgaven in de MOOC

- (Alles) moet nagekeken door computer
- Geen Maple TA/TELMME e.d.
- Geogebra voor applets

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GeoGebra

De toekomst

Impact MOOCs

Klein

Groot

De toekomst

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Tijdelijke hype

Here to stay

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Here to stay

Fancy tekstboek

Nieuwe vorm opleiding

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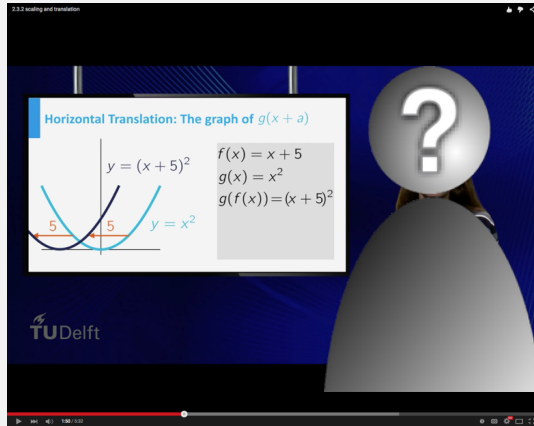
Nieuwe vorm opleiding

Alleen paar uni's

Gemaakt door iedereen

Wat kan ik met MOOCs?

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2.2.2 Scaling and Translation

Horizontal Translation: The graph of $g(x+a)$

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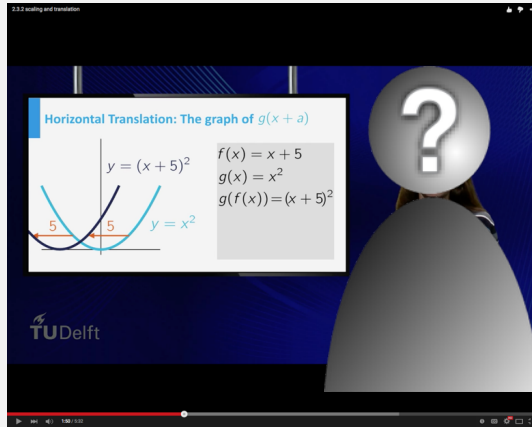
$f(x) = x+5$
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The image shows a video player interface. The main content is a slide from a lecture. The slide has a dark blue background with a white box containing a graph and equations. The graph shows two parabolas: a blue one, $y = x^2$, and a black one, $y = (x+5)^2$. The black parabola is shifted 5 units to the left of the blue one. Two vertical red lines are drawn at $x = -5$ and $x = 0$, with the number '5' written below each. The equations $f(x) = x+5$, $g(x) = x^2$, and $g(f(x)) = (x+5)^2$ are listed to the right of the graph. The TU Delft logo is in the bottom left. A large grey question mark icon is overlaid on the right side of the video player. The video player controls are visible at the bottom.

Zelf maken

Wat kan ik met MOOCs?

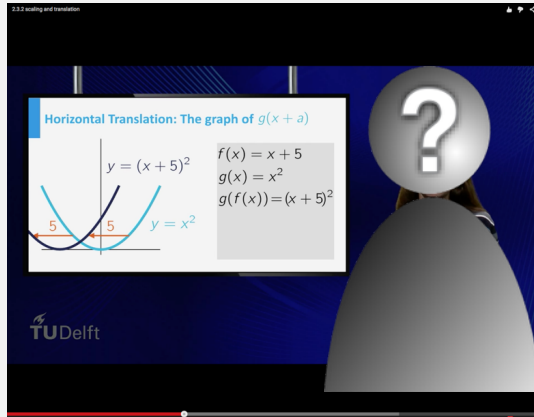


Zelf maken

Verwijzen



Wat kan ik met MOOCs?



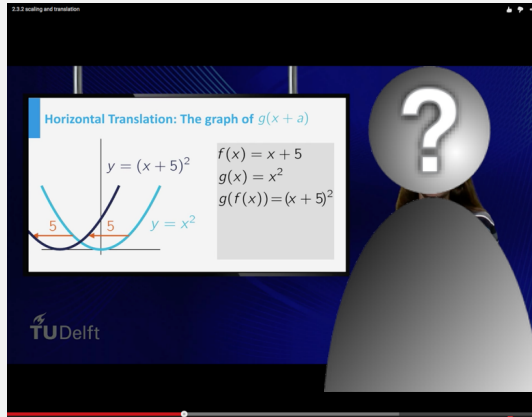
Zelf maken

Verwijzen



Filmpjes
gebruiken

Wat kan ik met MOOCs?



Zelf maken



Verwijzen



Filmpjes
gebruiken



Deelnemen



Thank you for your attention

 TU Delft

