



IncluEdu
where learning is inclusive

Paperless Maths Lessons



BG/BRG Fürstenfeld

- Founded in 1905 as "KK Staatsrealschule"
- 800 students, 70 teachers
- Academic secondary school for students from 10 to 18 years of age
- Final Exam: Leaving examination



iPads @ BG/BRG Fürstenfeld

- from 2011/12
- from the beginning: 1:1 approach
- 1 - 5 iPad - Classes per schoolyear
- from 2014/15 Erasmus+ Project:
„Methodological-didactic Use of iPads in lessons“
- <http://ipad-unterricht.blogspot.de>
- 2015/16: 4 iPad classes



Technical equipment

- iPad 3,4, iPad Air 2,4
iPad mini, iPad Pro
- Wifi, since 2015 user authentication
- Projector VGA, HDMI
- Apple Pencil
- Stylus, Adapter
- Apple TV



Software - Apps

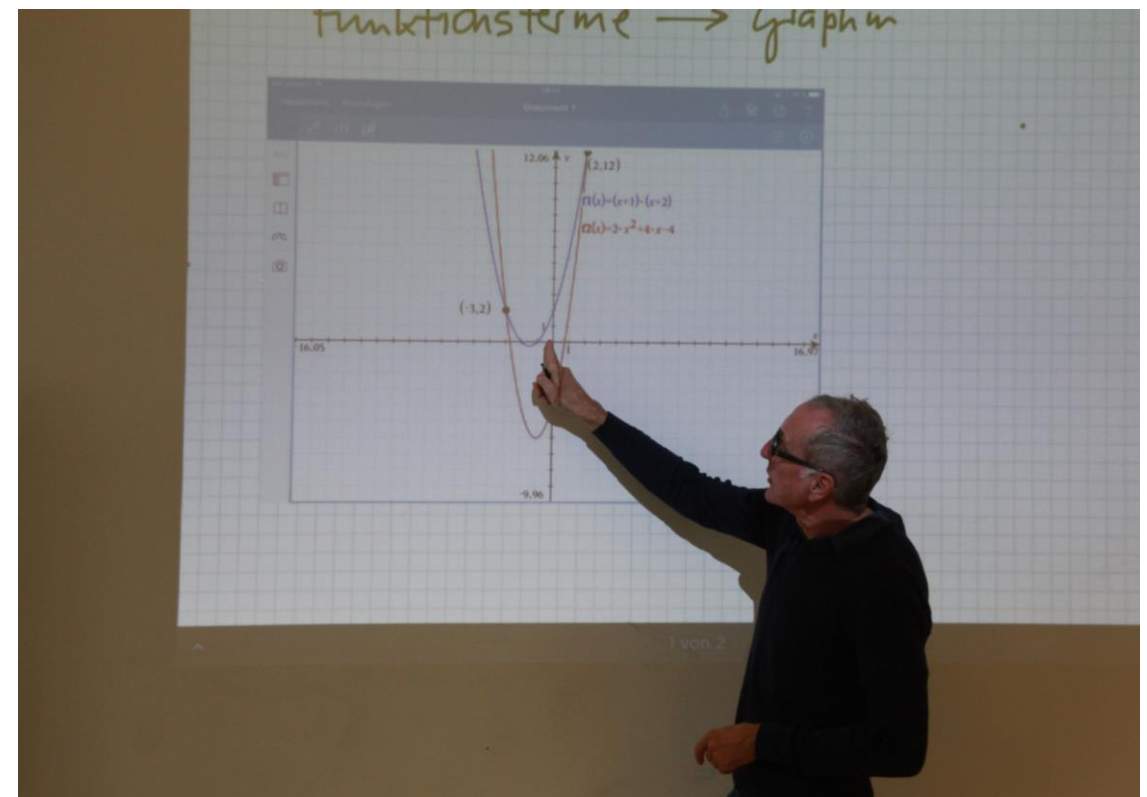
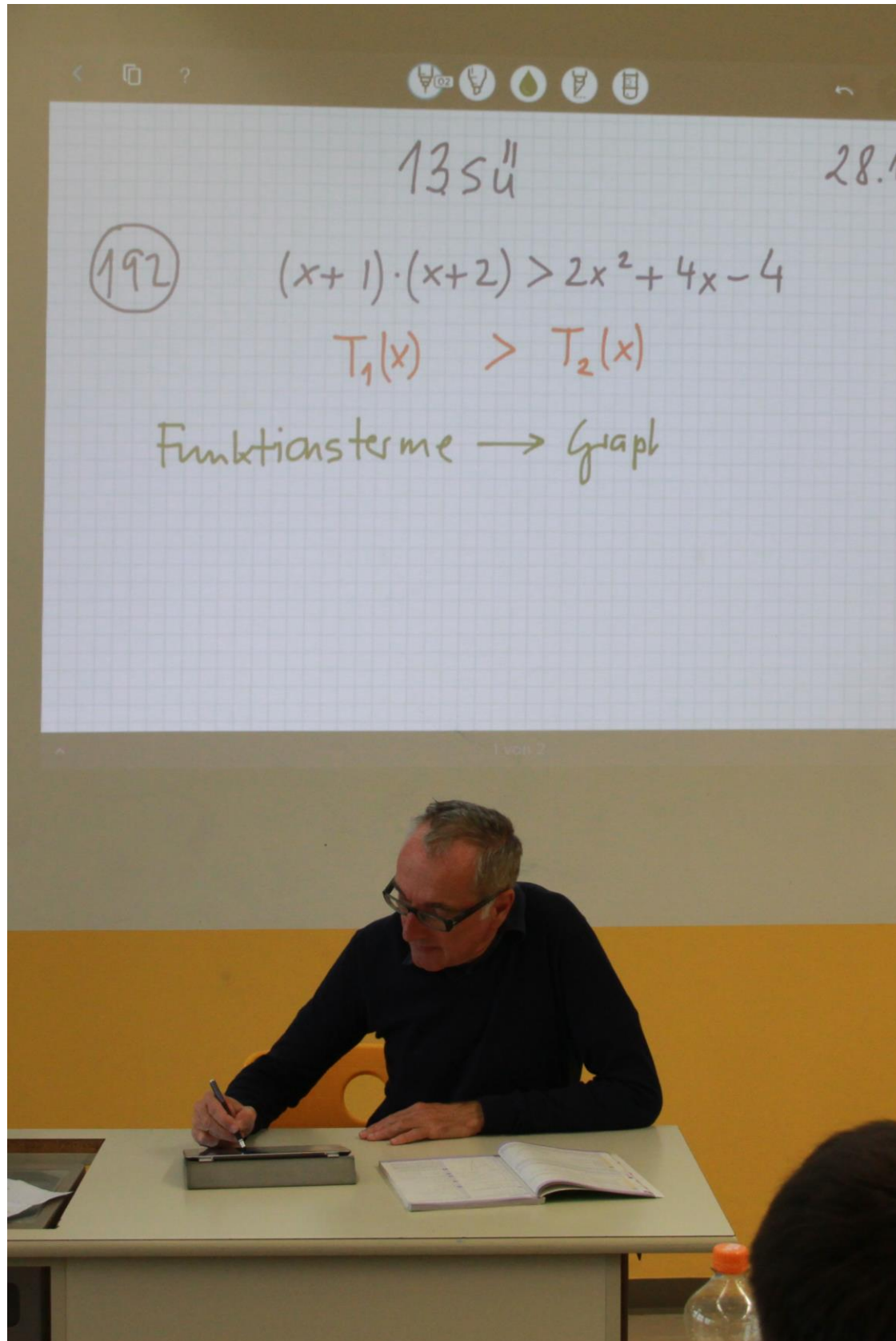
- Penultimate, GoodNotes, Notability, Bamboo Paper
- Showbie
- Socrative
- Quizlet
- Pages, Numbers, Keynote
- Ti Nspire CAS
- Dropbox



Classroom of the future?

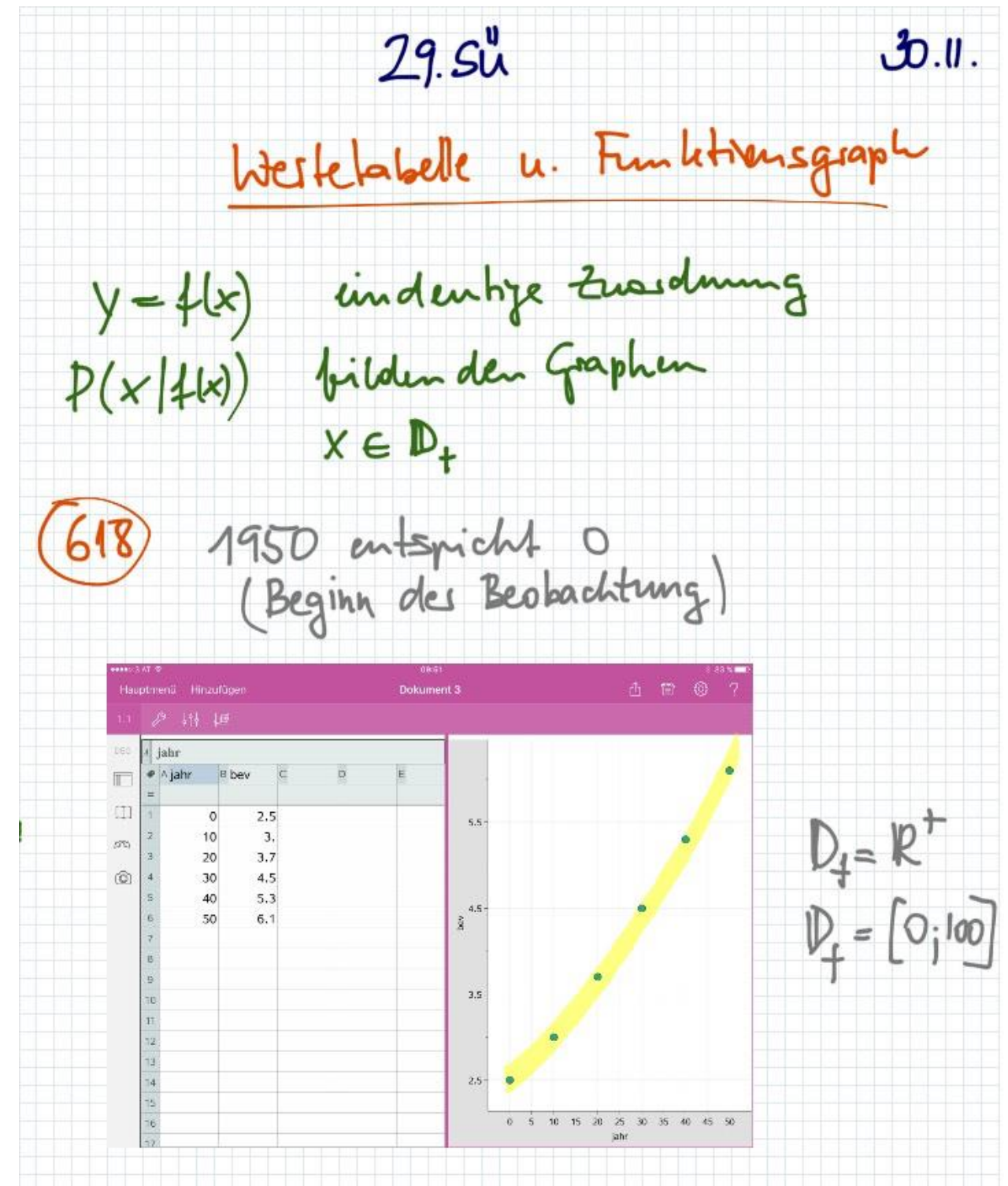
- Wifi & wireless projection of students iPads to the wall
- HDMI projector (Video, Sound)
- projection surface
- lectern





Note taking Apps

- Penultimate
- I have used it for years
- light, bright colours
- easy to use
- it can be easily followed when projected.
- You can export your notes as a PDF.
- Lense function
- other Apps: Notability, Paper, Bamboo Paper,...



Good Notes

- use it since 2016
- very user friendly
- can also be projected very easily
- PDFs and other elements can be imported into my Notes as well as exported
- Magnification function
- geometric forms
- transform handwriting into computer text



Notizbuch (8) Bearbeiten

Schulübung 21.4.

Differenzquotient
mittlere Änderungsrate

$[1; 3]$

$P(1/1)$ $Q(3/9)$

Sekanke

$$\frac{y - y_1}{t - t_1} = \frac{9 - 1}{3 - 1} = \frac{8}{2} = 4$$

mittlere Änderungsrate: 4

Students notes with the iPad

8. Hausübung 29.10.2015

236 a) $b^2 = l^2 - \frac{a-c}{2}$
 $b = \sqrt{4 - \frac{16-10}{2}} = 2,64575$
 $b \approx 2,64 \text{ cm}$

237 a) $p = \frac{b^2}{q} = \frac{40^2}{22} = 72,7273$
 $p \approx 72,7 \text{ cm}$
 $c = p + q = 72,7 + 22 = 94,7$
 $c \approx 94,7 \text{ cm}$

238 a) $b = \sqrt{c \cdot q} = \sqrt{27 \cdot 15} = 20,1246$
 $b \approx 20,1$
 $a = \sqrt{c^2 - b^2} = \sqrt{27^2 - 20,1^2} = 18,0275$
 $a \approx 18 \text{ cm}$
 $A = \frac{a \cdot b}{2} = \frac{18 \cdot 20,1}{2} = 180,9$
 $A \approx 180,9 \text{ cm}^2$

9. Hausübung 27.10.2015, 14:21

324 b) $\frac{2}{2a+1} - \frac{5}{5a-2} =$ $a \neq -0,5$
 $a \neq 0,4$
 $\frac{10a-4-10a-5}{(2a+1)(5a-2)} =$
 $= \frac{-9}{(2a+1)(5a-2)}$

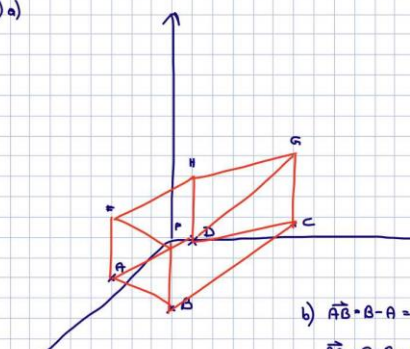
340 a) $I_1(x) = 2x + \frac{x^2}{x-1}$ $x \neq 1$
 $2 \cdot 0 + \frac{0^2}{0-1} = 0 + \frac{0}{-1}$
 $2 \cdot 1 + \frac{1^2}{1-1} = 2 + \frac{1}{0} = 2$
 $2 \cdot 3 + \frac{3^2}{3-1} = 6 + \frac{9}{2} = 10,5$

355 $(A+B)^2 = (-A-B)^2 =$
 $A^2 + 2AB + B^2 = A^2 + 2AB + B^2$

505 b) $\vec{a} = \begin{pmatrix} 1,4 \\ -0,5 \\ 2,5 \end{pmatrix}, \vec{b} = \begin{pmatrix} 7 \\ -2,5 \\ 4,5 \end{pmatrix}$
 $t \cdot \vec{a} = \vec{b} \quad t \cdot \begin{pmatrix} 1,4 \\ -0,5 \\ 2,5 \end{pmatrix} = \begin{pmatrix} 7 \\ -2,5 \\ 4,5 \end{pmatrix}$
 $t \cdot 1,4 = 7 \quad | :1,4 = t = 5$
 $t \cdot (-0,5) = -2,5 \quad | :(-0,5) = t = 5$
 $t \cdot 2,5 = 4,5 \quad | :2,5 = t = 1,8 \dots$

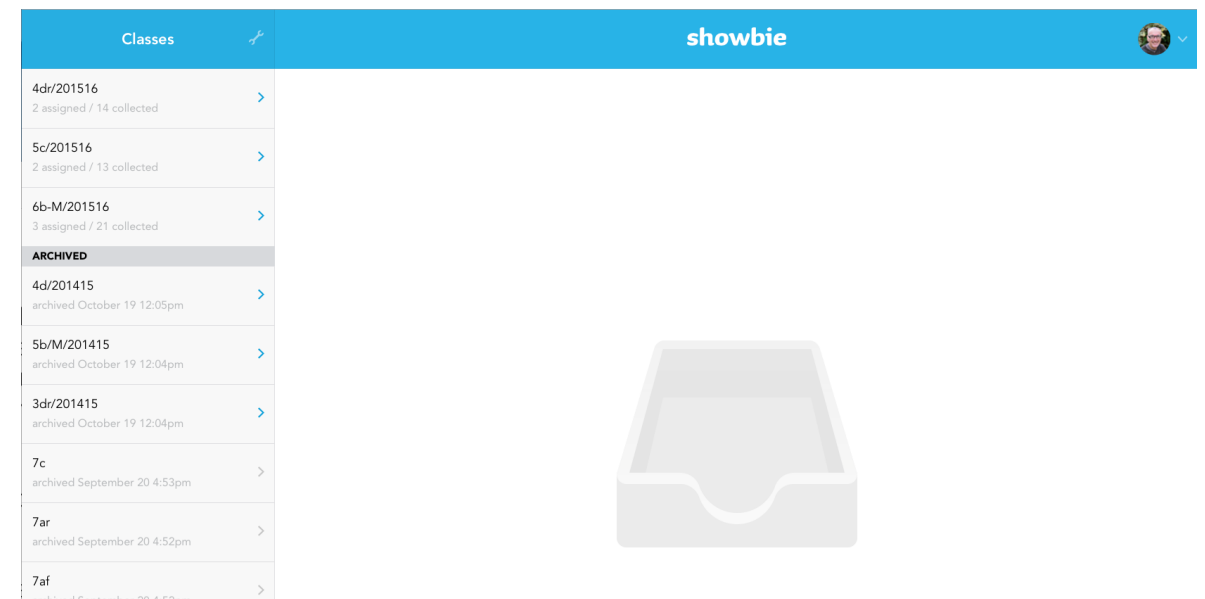
$\vec{a} \parallel \vec{b}$

511 a) $\vec{AB}?$ $A = (1|0|5), B = (1|8|9)$
 $\vec{AB} = B - A = \begin{pmatrix} 1 \\ 8 \\ 9 \end{pmatrix} - \begin{pmatrix} 1 \\ 0 \\ 5 \end{pmatrix} = \begin{pmatrix} 0 \\ 8 \\ 4 \end{pmatrix}$
 $|\vec{AB}| = \sqrt{0^2 + 8^2 + 4^2} = \sqrt{80}$

509 a) 
 c) $E = (4, -1, 3)$
 $F = (5, 3, 3)$
 $G = (-1, 6, 3)$
 $H = (0, 1, 3)$
 b) $\vec{AB} = B - A = \begin{pmatrix} 5 \\ 3 \\ 3 \end{pmatrix} - \begin{pmatrix} 1 \\ 0 \\ 5 \end{pmatrix} = \begin{pmatrix} 4 \\ 3 \\ -2 \end{pmatrix} = \vec{EF}$
 $\vec{BC} = C - B = \begin{pmatrix} -1 \\ 6 \\ 3 \end{pmatrix} - \begin{pmatrix} 1 \\ 8 \\ 9 \end{pmatrix} = \begin{pmatrix} -2 \\ -2 \\ -6 \end{pmatrix} = \vec{FG}$
 $\vec{CD} = D - C = \begin{pmatrix} 0 \\ 1 \\ 3 \end{pmatrix} - \begin{pmatrix} -1 \\ 6 \\ 3 \end{pmatrix} = \begin{pmatrix} 1 \\ -5 \\ 0 \end{pmatrix} = \vec{GH}$
 $\vec{DA} = A - D = \begin{pmatrix} 1 \\ 0 \\ 5 \end{pmatrix} - \begin{pmatrix} 0 \\ 1 \\ 3 \end{pmatrix} = \begin{pmatrix} 1 \\ -1 \\ 2 \end{pmatrix} = \vec{HE}$
 $\vec{AE} = \vec{BF} = \vec{CG} = \vec{DH} = \begin{pmatrix} 3 \\ 3 \\ -2 \end{pmatrix}$

Showbie

- The class management solution for iPad classes.
- requirement: good Wifi connection
- all communication via the Showbie Servers
- Platform independent - browser versions
- Teacher and Students share data in an easy and well organised way
- teacher notes are shared with students together with their homework.



Showbie

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12hü: 174

Shared Folder

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Shared Folder

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Due November 24, 2015

Collected

Upgrade

write a comment

Post ↗

Geschrieben 17.11.15, 08_49

Mr. Friessnig
November 17 9:21am

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TI Nspire CAS

- fulfills the technical requirements for leaving examinations 2018 in Austria
- Costs are around 30€
- Currently only available as an iPad-App.
- Very powerful maths app
- Can perfectly be combine with GoodNotes and Showbie
- Animations available - e.g. Slider

