

GeoGebra and its Community

*Παρουσίαση που μεταφράστηκε στους
επιμορφούμενους για τις ανάγκες της
Επιμόρφωσης Β' επιπέδου
Γ. Κομίνης – ΠΕ(03)*



JKU

JOHANNES KEPLER
UNIVERSITÄT LINZ

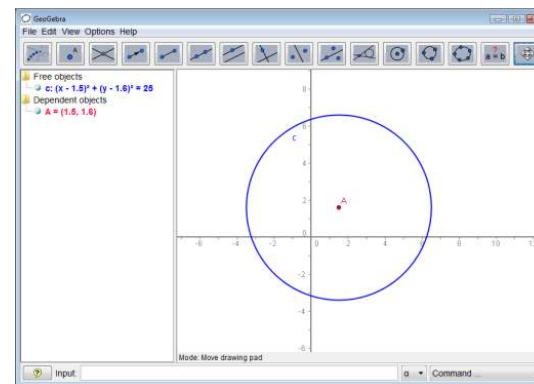
GeoGebra and its Community

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www.geogebra.org



Επισκόπηση

- **GeoGebra**
Idea & Short History
- **Free Materials**
Open Educational Resources
- **Communities**
Collaboration





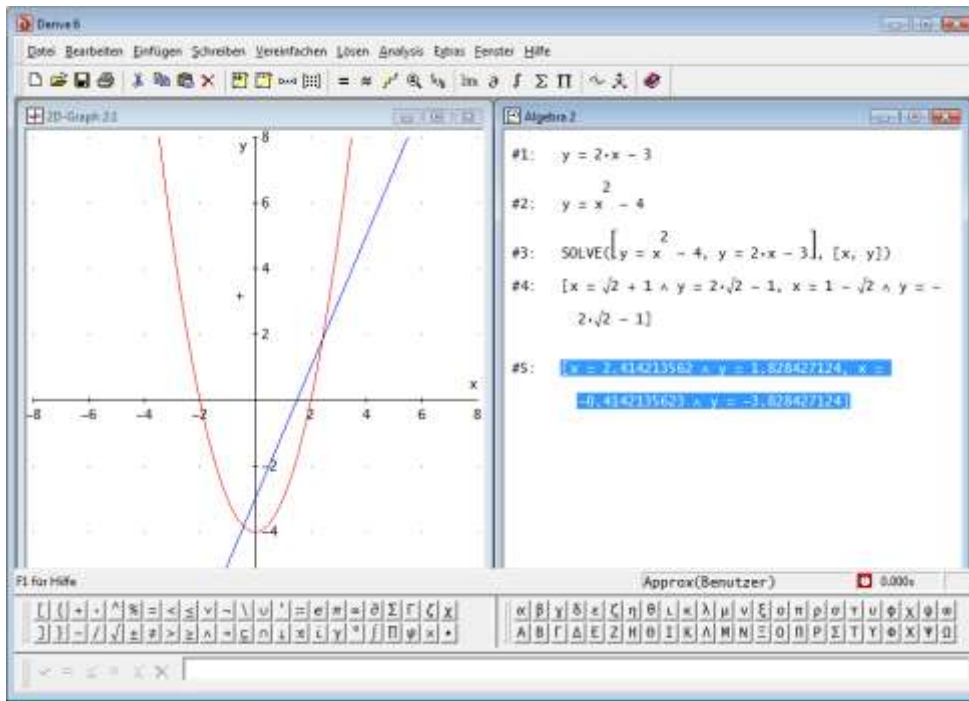
GeoGebra

Ιδέα και σύντομη ιστορία



Computer Algebra Systeme

Αλγεβρικά Υπολογιστικά Συστήματα

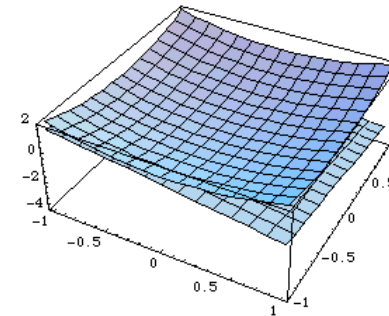


Derive

```

Clear[f, fx, fy, a, b, c]
f[x_, y_] := x^2 + y^2
x0 = -0.5;
y0 = -0.5;
fx[x_, y_] = D[f[x, y], x];
fy[x_, y_] = D[f[x, y], y];
a = fx[x0, y0];
b = fy[x0, y0];
c = f[x0, y0] - a x0 - b y0;
T[x_, y_] := a x + b y + c
Show[Plot3D[f[x, y], {x, -1, 1}, {y, -1, 1},
  PlotRange -> {-4, 2}],
  Plot3D[T[x, y], {x, -1, 1}, {y, -1, 1},
  PlotRange -> {-4, 2}]]

```



Mathematica



Dynamic Geometry Software

Λογισμικό Δυναμικής Γεωμετρίας

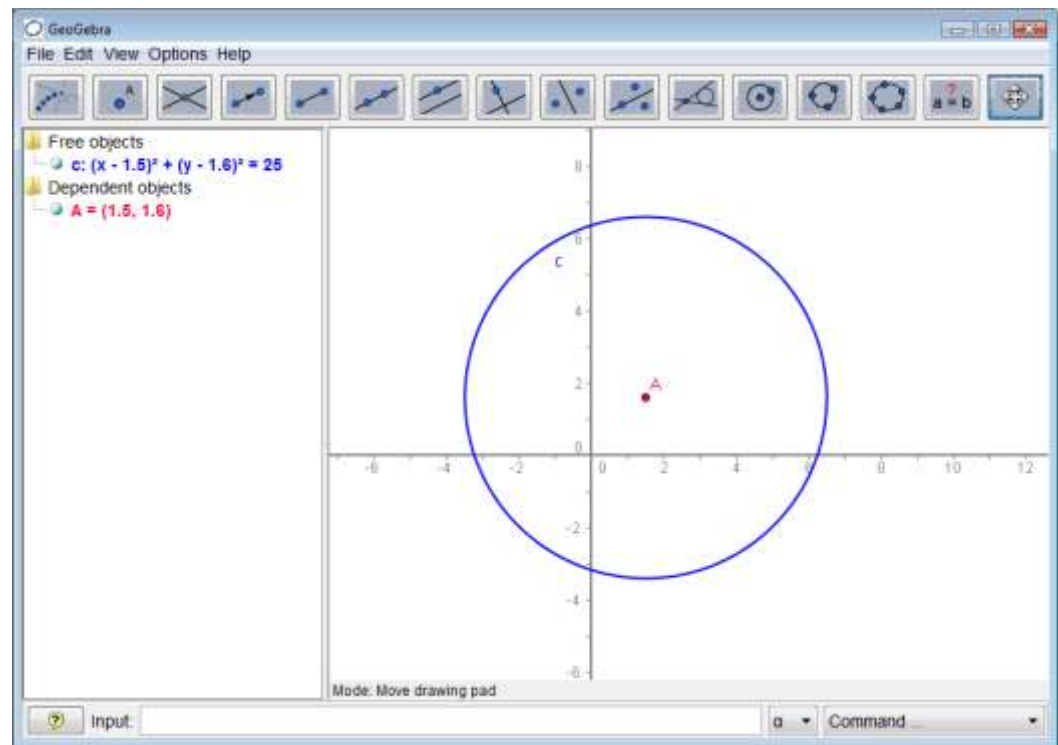
The image displays three overlapping windows from dynamic geometry software:

- Cabri Geometry II Plus - [3 circles...]**: Shows a geometric diagram with a green circle and a black circle. Text indicates "Area of the green circle + are" and "24.10 cm²".
- GEONExT**: Shows a construction of a green triangle ABC inscribed in a circle. Points E and D are on the circle, and lines CE and BD are drawn. The status bar shows "Taille 498 x 400 Zoom 100 %".
- Netscape: Midpoint.cdy**: Shows a complex geometric diagram with multiple circles and points labeled $A, B, C, D, E, F, G, H, K$. A text box contains instructions: "Construct the midpoint of A and B! You may use ruler and compass only. You need two circles with equal size. Next hint available in 28 seconds. You are on the right track! Great! You solved this exercise!".



GeoGebra = Geometry + Algebra

- 2002: Multiple Representations
(Πολλαπλές Αναπαραστάσεις)
- 2003: Open Source
(Ανοικτός Κώδικας)
- 2004: Web Export
(Εξαγωγή στο Web)
- 2005: Community
(Forum & Wiki)





Salzburg 2001



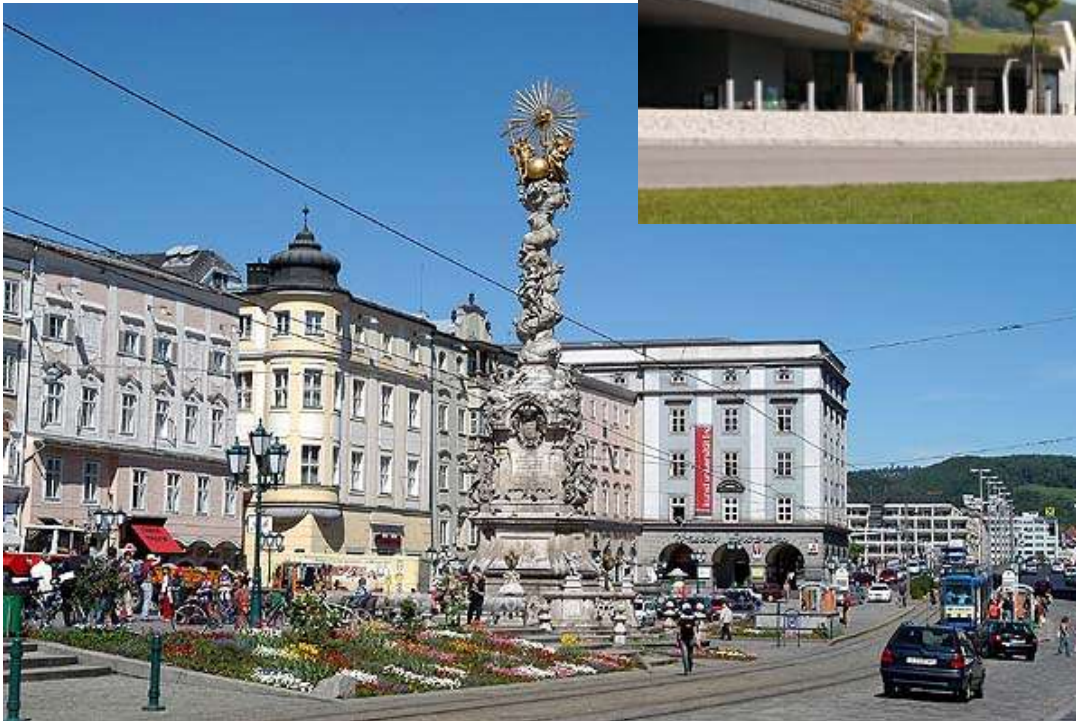


Florida 2006





Linz 2010





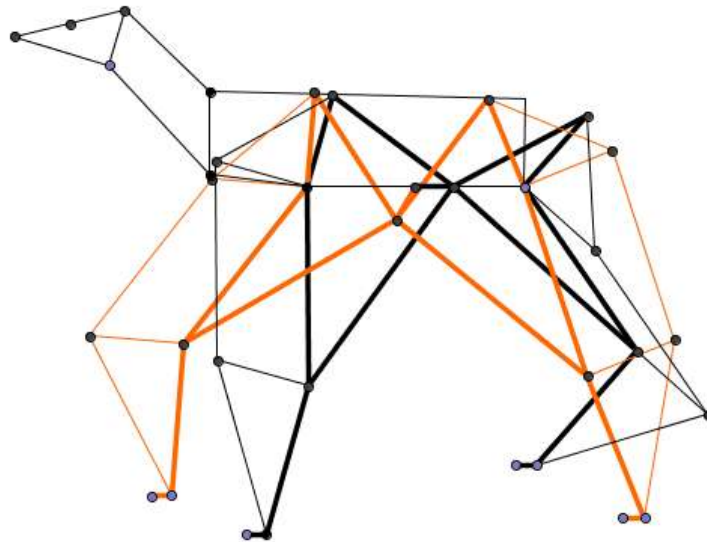
Dynamic Mathematics

Some GeoGebra Examples



Dynamic Geometry

$a = 2.3$
 $b = 0.4$
 $c1 = 1.6$
 $c2 = 1$
 $c3 = 2.6$
 $c4 = 2.1$
 $t = 0^\circ$



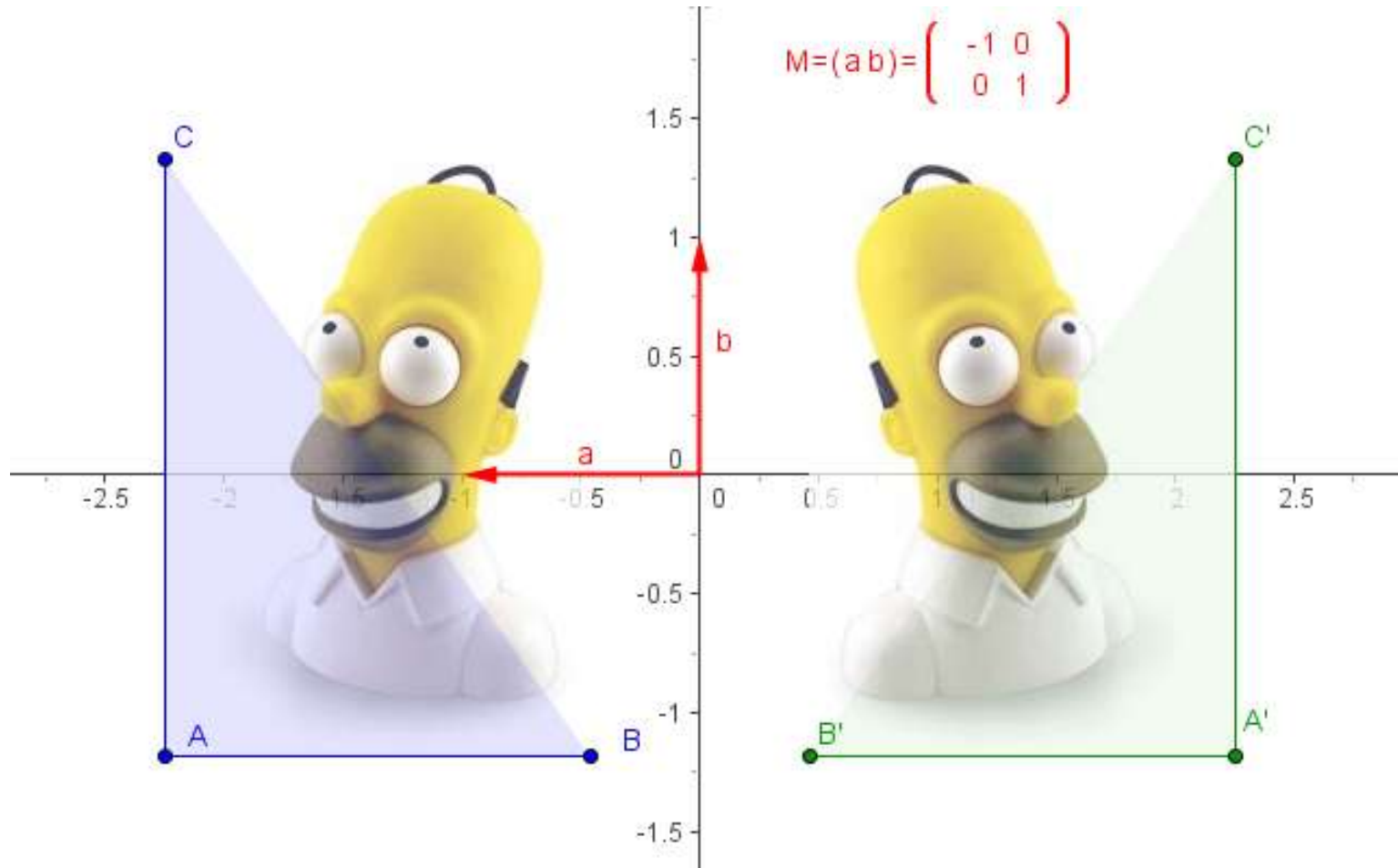
[Αρχείο .ggb](#)

[Video 1 - mechanism](#)

[Video 2 – Theo Jansen](#)



Dynamic Algebra





Dynamic Functions

$$f(x) = \sin(ax + b)$$

$$a = 2$$

$$f(x) = \sin(2x + 0)$$

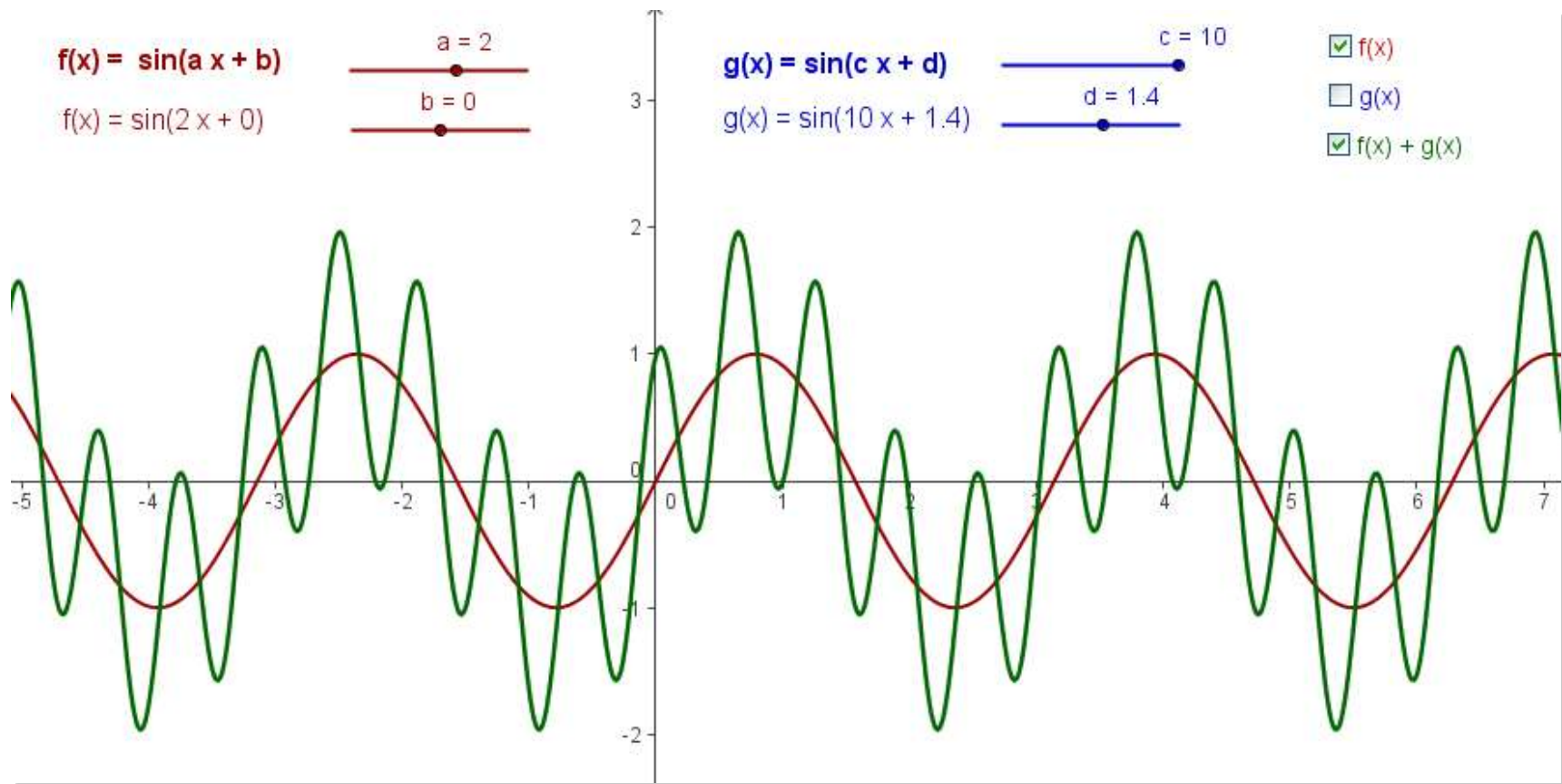
$$b = 0$$

$$g(x) = \sin(cx + d)$$

$$c = 10$$

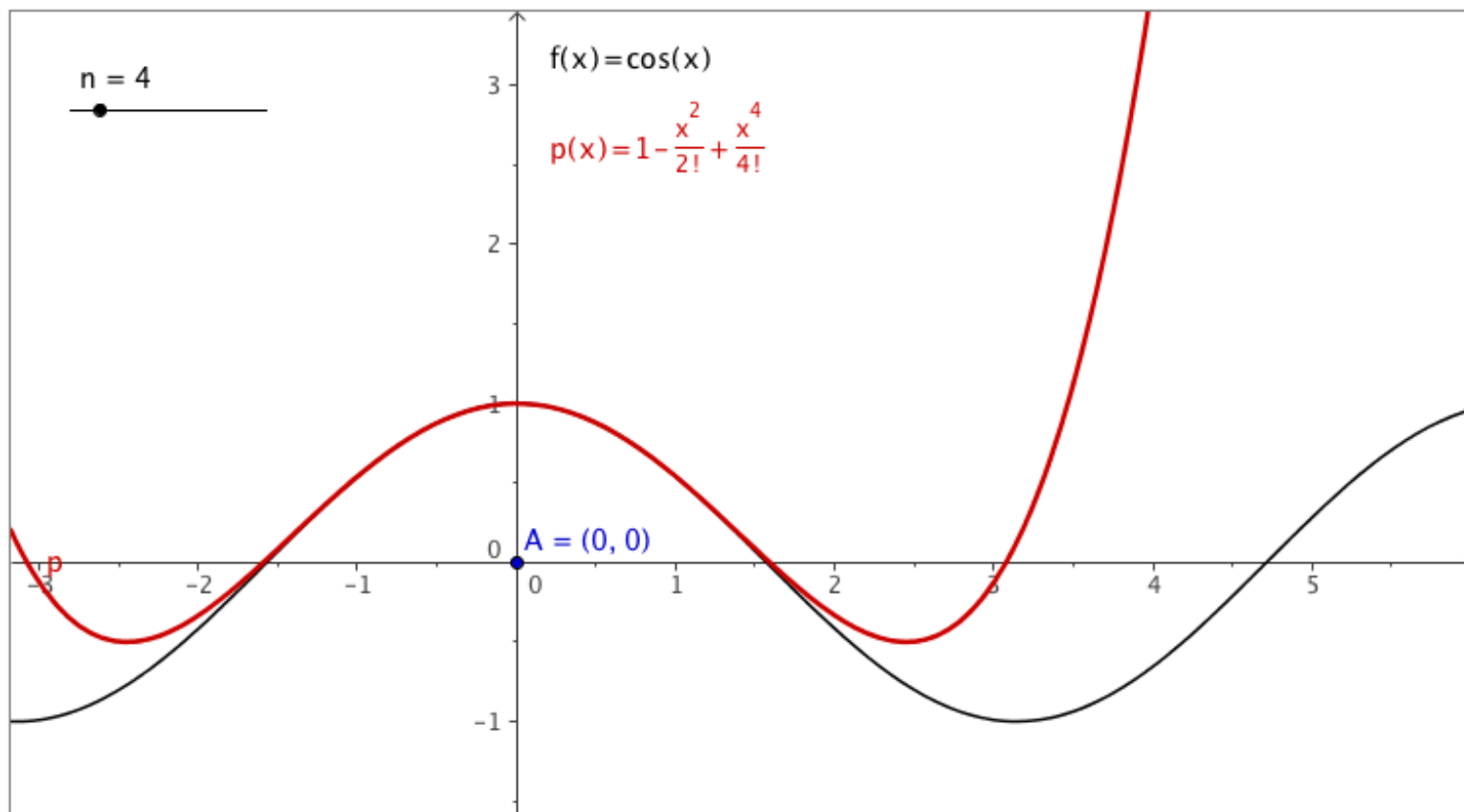
$$g(x) = \sin(10x + 1.4)$$

$$d = 1.4$$

 $f(x)$ $g(x)$ $f(x) + g(x)$ 

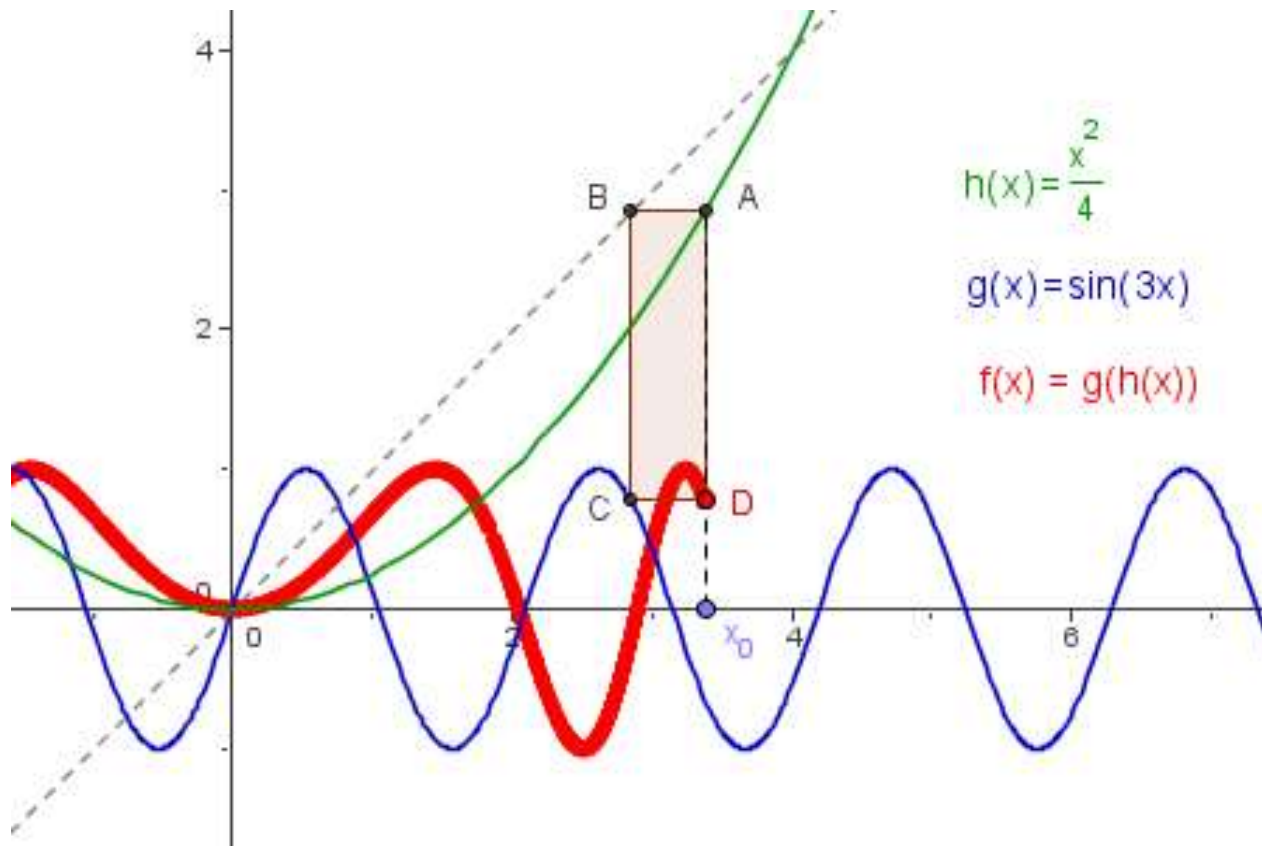


Dynamic Calculus



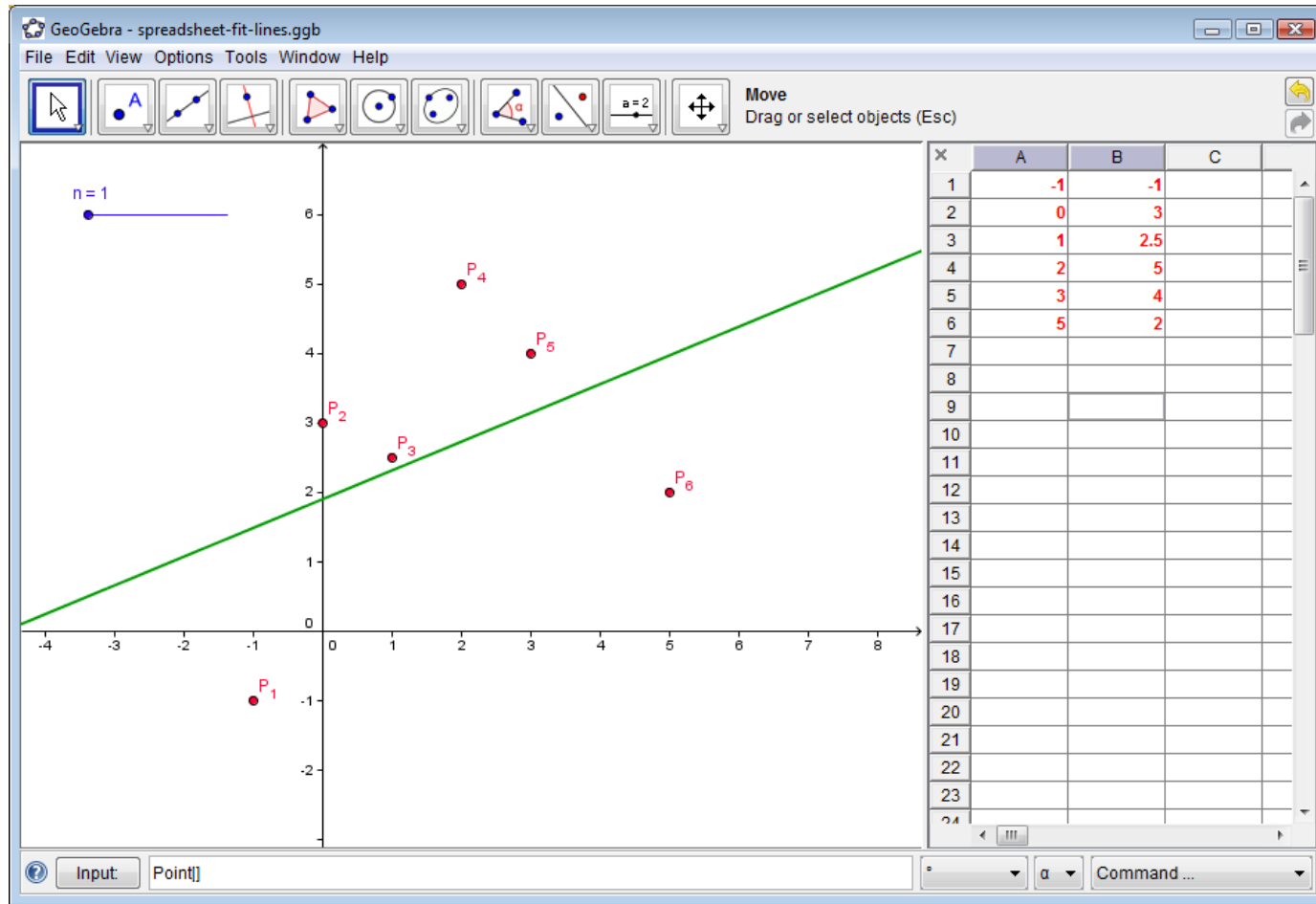


Combinations: Functions & Geometry



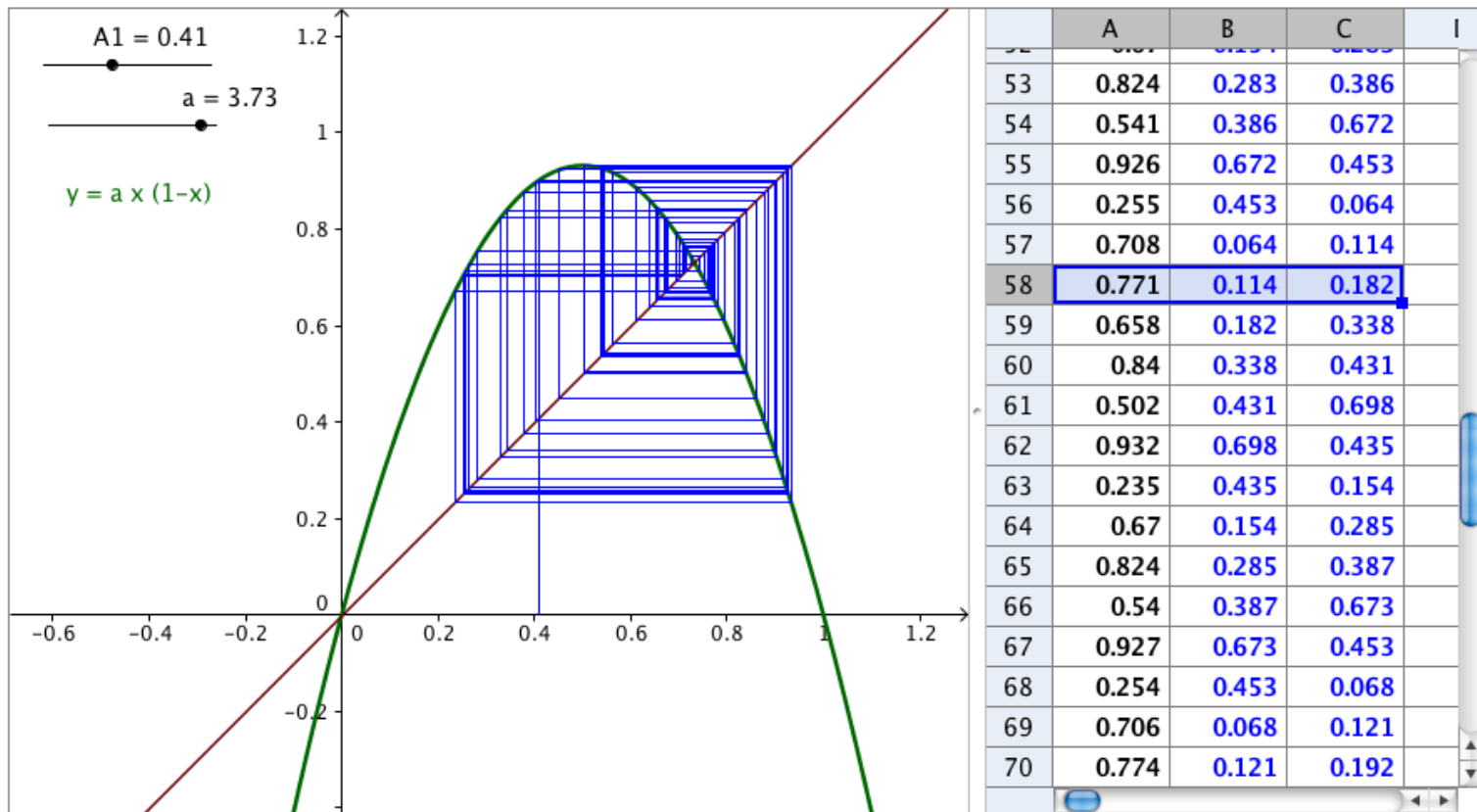


Dynamic Statistics





Combinations: Geometry & Tables





Free Materials

Open Educational Resources

Ανοικτά Εκπαιδευτικά Μέσα



Open Source > Free of charge

Free software is a matter of liberty, not price.

(Το ελεύθερο λογισμικό είναι ζήτημα ελευθερίας, όχι κόστους)



To understand the concept, you should think of free as in free speech, not as in free beer.

(Για να κατανοήσετε την έννοια, θα πρέπει να σκεφτείτε ελεύθερα όπως στην ελευθερία του λόγου, όχι όπως στη δωρεάν μπύρα).

(Free Software Foundation)



50 Years GeoGebra Development

- 2001 Markus starts coding
- 2005 Yves joins 
- 2007 Mike joins 
- 2011: 43 developers & 200 translators
Celebrating 10 years of GeoGebra
- So what about the 50 years?



Open Source makes GeoGebra 50

- [MathPiper](#)
- [Reduce](#)
- [Apache Commons Mathematics Library](#)
- [FreeHEP Java Libraries](#)
- [EPS Graphics Library](#)
- [JLaTeXMath](#)
- [JUNG](#)
- [Tango Icon Gallery](#)
- [JSXGraph](#)
- The Computer algebra system Reduce was started in the 1960s by Anthony Hearn.
- Reduce has been open sourced in 2009 and is part of GeoGebra since 2011.
- Thus, GeoGebra's development really started **50 years** ago.



Open Educational Resources

■ Free Learning and Teaching Materials

(UNESCO 2002: *Forum on the Impact of Open Courseware for Higher Education in Developing Countries*)

- Content: Courses, Modules, Learning Objects
- Tools: Authoring and Sharing Software
- Licenses: Open-Source, Creative Commons

■ Features

- Free of charge: Equal Opportunities
- Change- and Reusable: Sustainability
- Support Collaboration: Sustainability



OER: Share – Remix – Rework

The screenshot displays the Curriki website interface. At the top, there is a navigation bar with 'Home' and 'Courses' tabs. A search bar is located in the top right corner. The main content area features a central banner with the Curriki logo and the tagline: 'A website where the community shares and collaborates on free and open source curricula'. Below this, there are three main columns: 'Find' (Collect lesson plans, teaching activities, student worksheets and more.), 'Contribute' (Share your favorite curricular resources to improve education globally.), and 'Connect' (Collaborate with teachers in your school, or educators around the world.). A sidebar on the left lists various course categories such as Architecture and Planning, Engineering, Health Sciences and Technology, Humanities, Arts, and Social Sciences, Management, Science, and Other Programs. At the bottom right, the Creative Commons logo is prominently displayed.



GeoGebraWiki

Admin my talk preferences my watchlist my contributions log out

article discussion edit history unprotect delete

GeoGebraWiki International

navigation

- Main Page
- English
- French
- Recent changes
- Help

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

Main Page

Welcome to the International GeoGebraWiki. GeoGebraWiki is a free pool of teaching materials for the software [GeoGebra](#). Everyone can contribute to this pool and it may be used free of charge.

English - Catalan, 中文 (Chinese), Danish, Dutch, Italian, 한국어 (Korean), Norwegian, Spanish, Turkish

Workshops - Know How - Toolkits - New Articles - All Articles

- Help for GeoGebraWiki - find out about this project
- GeoGebra Upload Manager - to upload your files
- Image Upload - to upload your images
- GeoGebra Homepage - everything about GeoGebra
- GeoGebra User Forum - the best place to ask questions

Tip: "Shift + click" opens a link in a new window

Mirror Experiment - GeoGebra Dynamic Worksheet - Mirrors and Reflections

Mirror Experiment - GeoGebra Dynamic Worksheet - Mirrors and Reflections

0.43 0.288
0.288 0.621
0.621 0.525
0.525 0.245
0.245 0.385
0.385 0.817
0.817 0.342
0.342 0.497
0.497 0.924
0.924 0.164
0.164 0.462
0.462 0.18
0.18 0.338
0.338 0.475

Mirror Experiment

Foot Ray
 In and Out Angles
 Head Ray
 Virtual Ray
 Virtual Image
 Image on Mirror
 Vertical + Horizontal

Equation: $y =$

*15,000 Learning Objects in 50 Languages
since 2005*



GeoGebra's Community

If you want to go fast,
go alone.

If you want to go far,
go together.

Warren Buffett



World Wide User Community

- 58 Languages
- 190 Countries
- 92 Institutes (67 Countries)
- GeoGebra in textbooks in 35 Countries
- 43 Developers
- 200 Translators
- 15,000 Online Learning Objects (Wiki)
- ~700,000 unique visitors/month
- ~400,000 downloads /month
- 6 million downloads in 2011
- On 5.5+ million classroom laptops



Visitors from 190 countries

Detail Level: Country/Territory ▾		Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits
1.	France	2,757,773	3.27	00:02:27	66.30%
2.	Germany	2,641,342	3.17	00:02:27	69.95%
3.	United States	1,686,015	3.03	00:02:48	62.83%
4.	Italy	903,086	3.56	00:02:49	66.83%
5.	Spain	624,854	3.33	00:02:45	66.16%
6.	Norway	579,134	2.79	00:02:05	63.01%
7.	Austria	552,587	3.19	00:02:30	63.98%
8.	Belgium	475,219	2.97	00:02:00	64.17%
9.	Denmark	453,984	2.63	00:02:02	67.96%
10.	Brazil	422,791	3.14	00:03:19	70.08%
11.	Mexico	396,552	3.06	00:03:20	71.29%
12.	United Kingdom	284,917	3.66	00:03:34	60.94%
13.	Switzerland	275,478	3.11	00:02:24	65.66%
14.	Greece	272,746	3.11	00:02:39	64.11%
15.	Portugal	257,664	3.77	00:02:51	66.29%
16.	Canada	230,569	2.92	00:02:31	66.89%
17.	Netherlands	182,676	2.98	00:02:25	65.15%



GeoGebra User Forum



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GeoGebra User Forum

Last visit was:

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 [View active topics](#)

It is currently Thu Dec 16, 2010 3:03 am [All times are UTC + 1 hour]

Forum	Topics	Posts	Last post
English speaking users			
Using GeoGebra Questions concerning the use of GeoGebra as a stand-alone application	1464	7580	Thu Dec 16, 2010 2:19 am acron
Technological Questions Installation, dynamic worksheets, GeoGebraWiki, JavaScript, etc.	748	3482	Thu Dec 16, 2010 12:48 am acron
German speaking users			
Bedienung von GeoGebra Fragen rund um die Bedienung von GeoGebra als Einzelanwendung	829	3236	Wed Dec 15, 2010 9:35 pm ulischmidt
Technische Fragen Installation, dynamische Arbeitsblätter, GeoGebraWiki, JavaScript usw.	370	1425	Tue Dec 14, 2010 3:40 pm excurly
French speaking users			
Français Forum pour les utilisateurs de GeoGebra qui parlent français Moderator: Noel Lambert	1687	11000	Thu Dec 16, 2010 1:11 am Dragonmastertran
Vers4 Messages relatifs aux versions beta 4.0 Moderator: Noel Lambert	51	378	Sat Dec 11, 2010 8:44 am George Sturr
Français (Archives) Archives du forum français Moderator: Noel Lambert	146	857	Wed Nov 18, 2009 8:22 pm pascal50
International users			



International GeoGebra Institute

- Teacher training and support
 - Offer workshops & support
- Material and software development
 - Share free materials
- Research (έρευνα)
 - Encourage and coordinate collaborative research
- (Outreach) (υπέρβαση)
 - Enable disadvantaged communities



92 Current GeoGebra Institutes

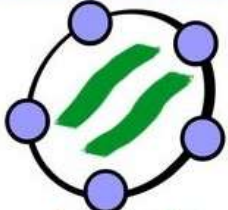
67 countries. More coming soon ...



<http://www.geogebra.org/community>

GeoGebra

Instituto GeoGebra



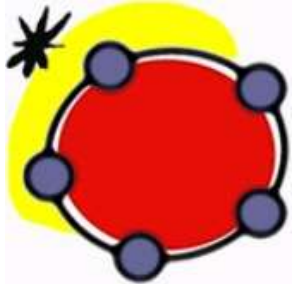
Andaluçia

Svenska GeoGebraInstitutet

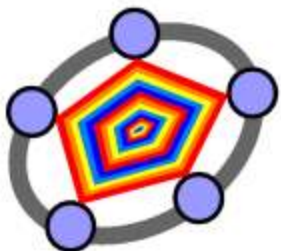
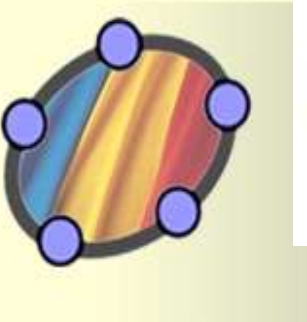
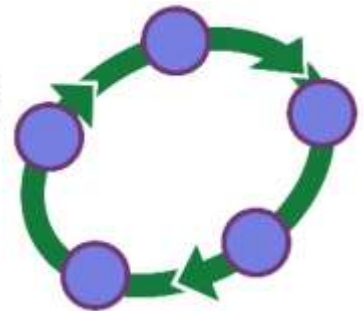


GiOhio

GeoGebra Institute of Ohio



GeoGebra Institute of Australia



GeoGebra
Institute of
Malaysia (GIM)



GeoGebra
Instituto GeoGebra no Rio de Janeiro



GeoGebra Events



- Individual Workshops
- GeoGebra Conferences

www.geogebra.org/events



GeoGebra Conferences 2012

Feb

Barcelona, Spain

April

Port Elizabeth, South Africa

Granada, Spain

Karlstad, Sweden

May

Maine, US

Porto, Portugal

Maynooth, Ireland

June

Ohio, US

July

Miskolc, Hungary

Seoul, Korea

Aug

Medellin, Colombia

Sept

Tartu, Estonia

September 14-16, 2012

Warsaw, Poland

Nov

Montevideo, Uruguay

Dec

Bangkok, Thailand



Nordic GeoGebra Network
nordic.geogebra.no

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 - 2011 Norway
 - 2012 Sweden
 - 2013 Denmark

Network members:

- Denmark
- Estonia
- Finland
- Iceland
- Lithuania
- Norway
- Sweden

Granted by:

The Nordic GeoGebra Network is a collaboration between teachers, teacher educators and researchers in mathematics education with the aim of sharing materials and exchanging experiences concerning the use of ICT in the teaching of mathematics with emphasis on the GeoGebra software.

The Network is granted by Nordplus Horizontal.

Latest news

Programme for the NCGN Seminar in February 2012
The time schedule and the participant list for the NCGN seminar at Marstrand in February is now ready.
Posted: 7 Feb 2012 04:38 by Anders Sævi

Estonia 2012
The third Nordic GeoGebra Conference will take place in Tartu September 14-16, 2012.
Posted: 1 Feb 2012 06:23 by Anders Sævi

Programme for the NCGN seminar in April 2011
The time schedule and the participant list for the NCGN seminar at Hattignuten in April is now ready.
Posted: 7 Feb 2012 04:38 by Anders Sævi

Lithuania in 2011
The second Nordic GeoGebra Conference will take place in Lithuania September 30th – October 2nd 2011. [Link to the conference web page](#)
Posted: 14 May 2011 03:03 by Anders Sævi

Showing posts 1 - 4 of 4. [View more »](#)

Estonian teachers at the conference in Reykjavik 2010.
Photo: Mikko Rauhala

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Nordic GeoGebra Conference Tartu, Sep 14-16

<http://nordic.geogebra.no>

Thank you!

Markus Hohenwarter
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Presentation Slides
<http://www.geogebra.org/talks>