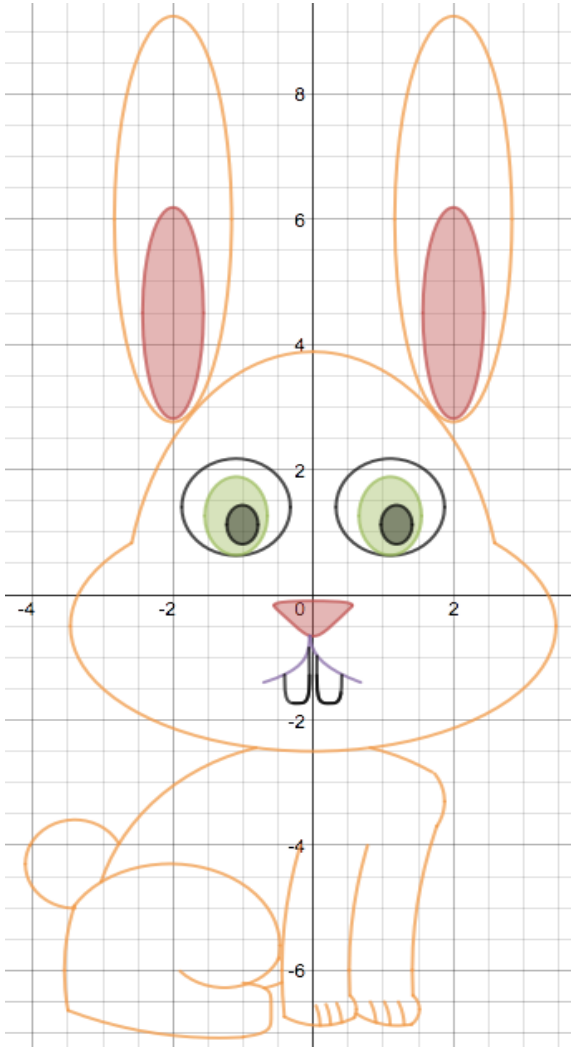
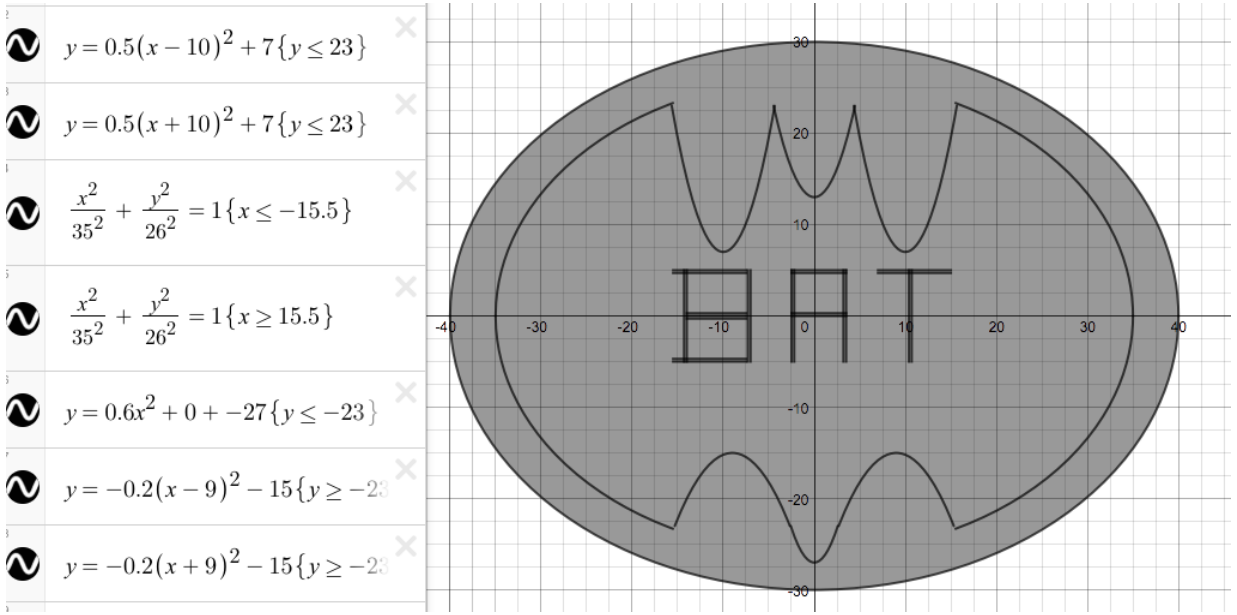
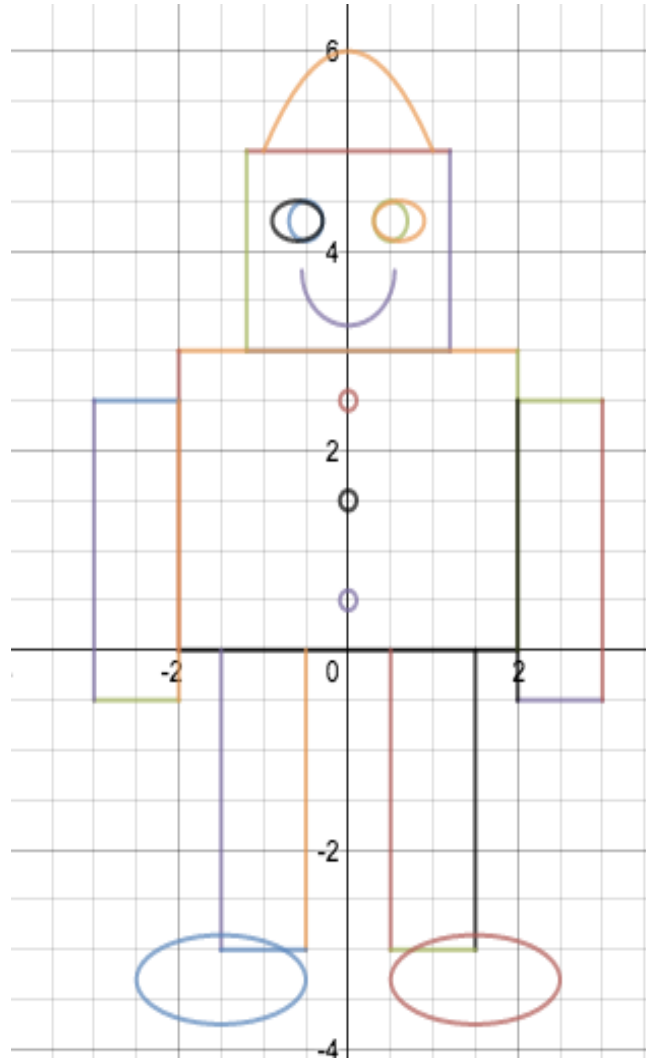
Algebra Artisten

Rita med Desmos

@CeMatematik







Cecilia Christiansen

Carlssons skola

Dagens program

Bakgrund

Åk 8och Åk 9

Arbeta vidare med konstverken

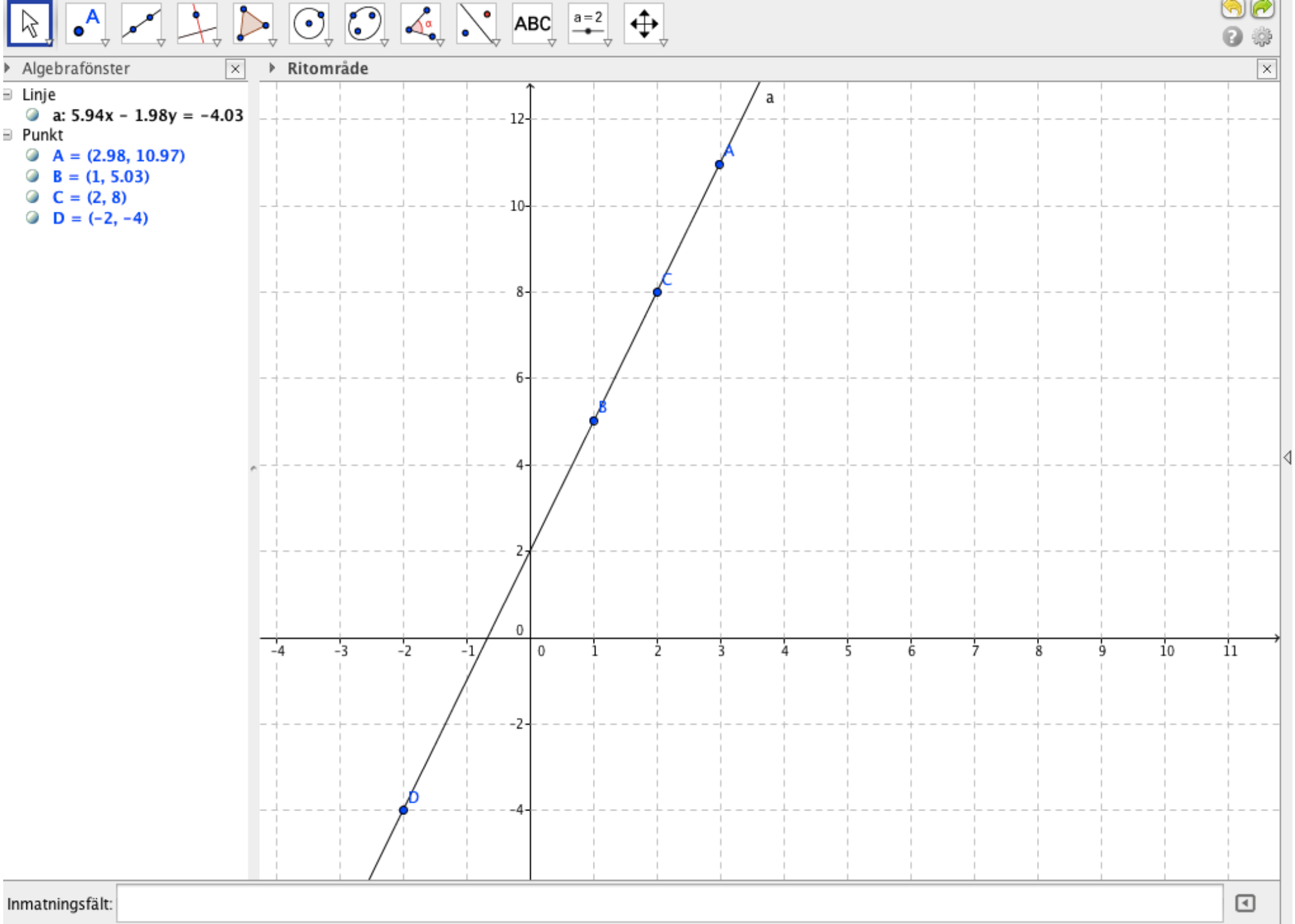
Prova själv Desmos

Lektion 1 (40 min) åk8

Hitta fyra punkter som uppfyller $y = 3x+2$

Några av punkterna som eleverna hittade:

$(0,2)$, $(3,11)$, $(1,5)$, $(-2,4)$


Algebrafönster
Linje
a: 5.94x - 1.98y = -4.03
Punkt
A = (2.98, 10.97)
B = (1, 5.03)
C = (2, 8)
D = (-2, -4)
Ritområde
a
A
B
C
D
Inmatningsfält:

Hitta punkter som uppfyller $y \leq 3x + 2$

Några av punkterna som eleverna hittade:

(6,2), (9,4), (8,10), (4,6), (7,-2), osv.

GeoGebra (1)

Algebrafönster

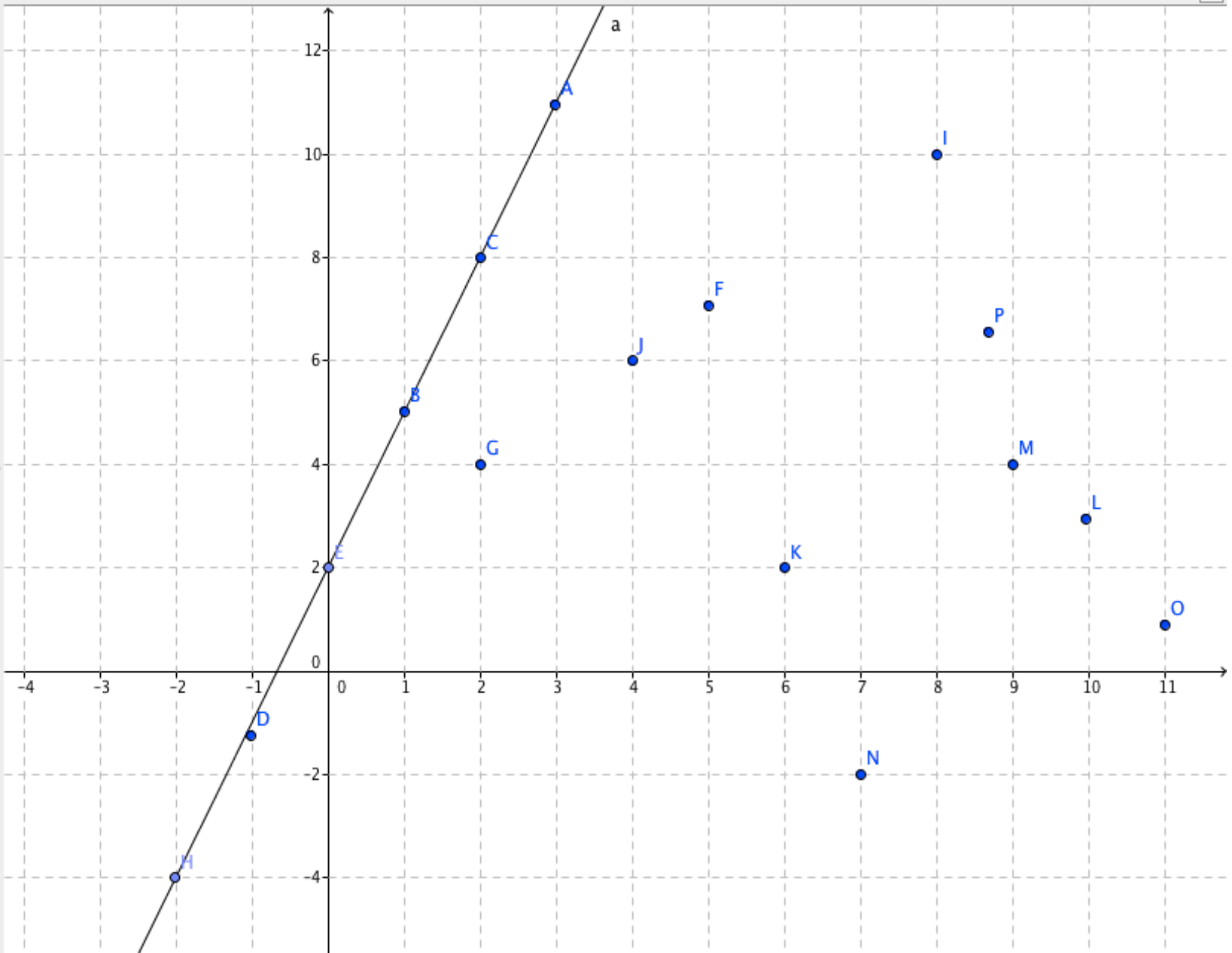
Linje

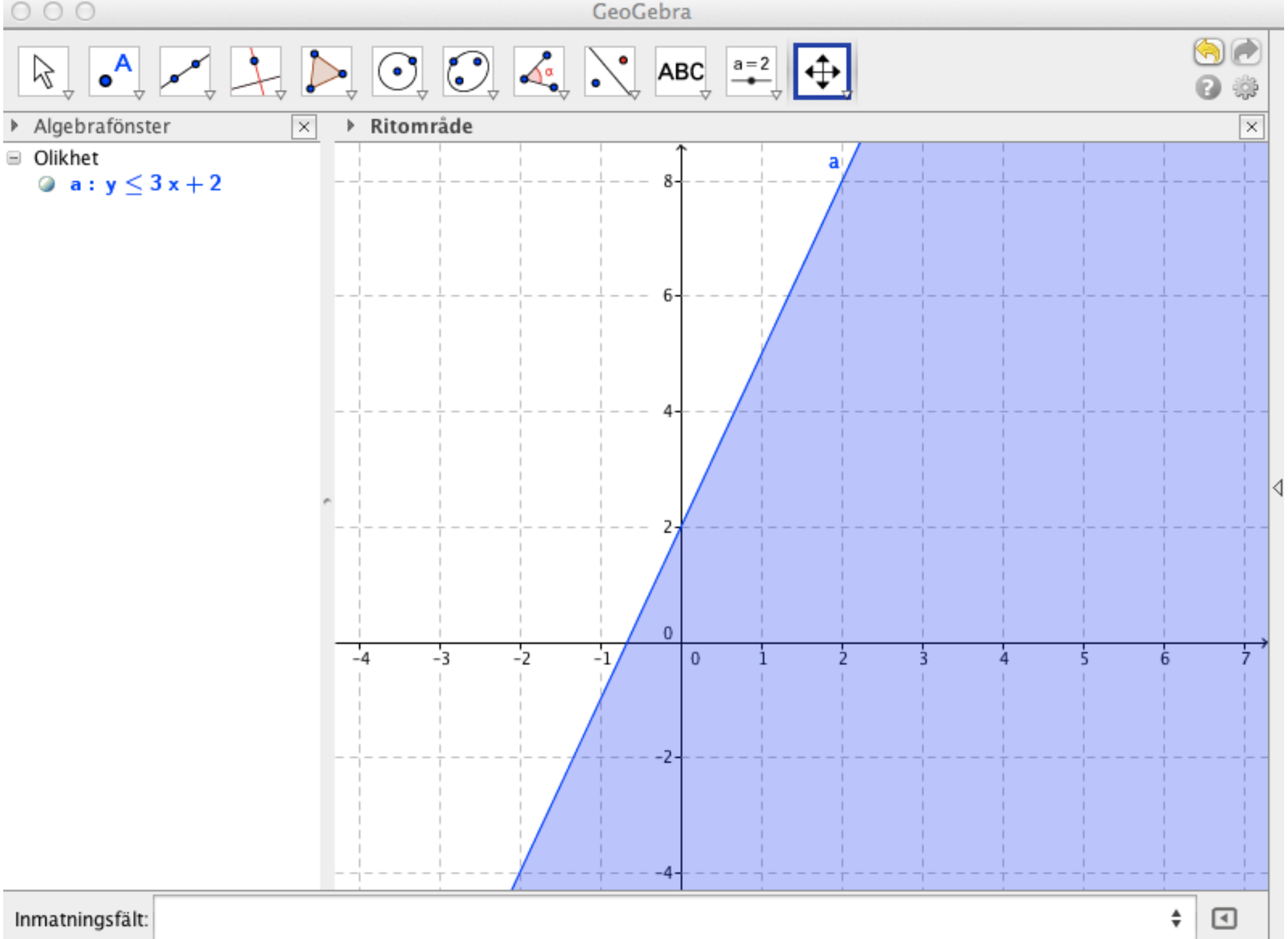
a: 5.94x – 1.98y = –4.03

Punkt

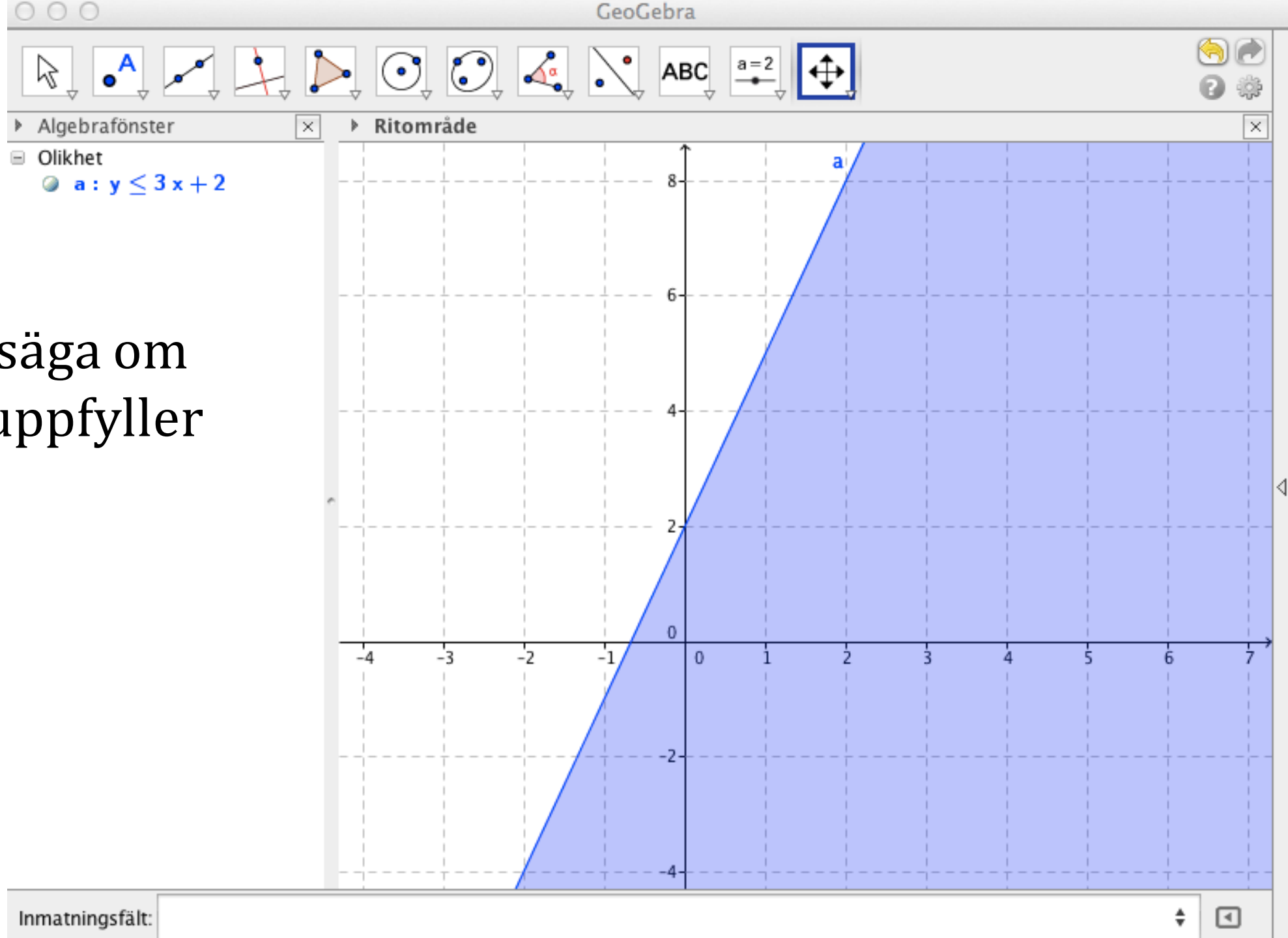
A = (2.98, 10.97)
B = (1, 5.03)
C = (2, 8)
D = (–1.02, –1.24)
E = (0, 2)
F = (5, 7.08)
G = (2, 4)
H = (–2.01, –4)
I = (8, 10)
J = (4, 6)
K = (6, 2)
L = (9.96, 2.95)
M = (9, 4)
N = (7, –2)
O = (11, 0.9)
P = (8.68, 6.57)

Ritområde




GeoGebra
Algebrafönster
Olikhet
a : y ≤ 3 x + 2
Ritområde
a
Inmatningsfält:

Vad skulle du säga om punkter som uppfyller $y \geq 3x + 2$?



$y = 3x+2$ punkter **på** linjen

$y \leq 3x + 2$ punkter **på eller under** linjen

$y \geq 3x + 2$ punkter **på eller över** linjen

$y < 3x + 3$ punkter **under** linjen

$y > 3x + 2$ punkter **över** linjen

Lägga till bilder

Hitta punkter som uppfyller $x^2 + y^2 = 16$

$(0,4)$

$(4,0)$

$(1,\sqrt{15})$

$(0,-4)$

$(-4,0)$

$(\sqrt{2},\sqrt{14})$

$(\sqrt{4},\sqrt{12})$

$(\sqrt{8},\sqrt{8})$

$(\sqrt{10},\sqrt{6})$

$$x^2 + y^2 = 16$$

$(0,4)$

$(4,0)$

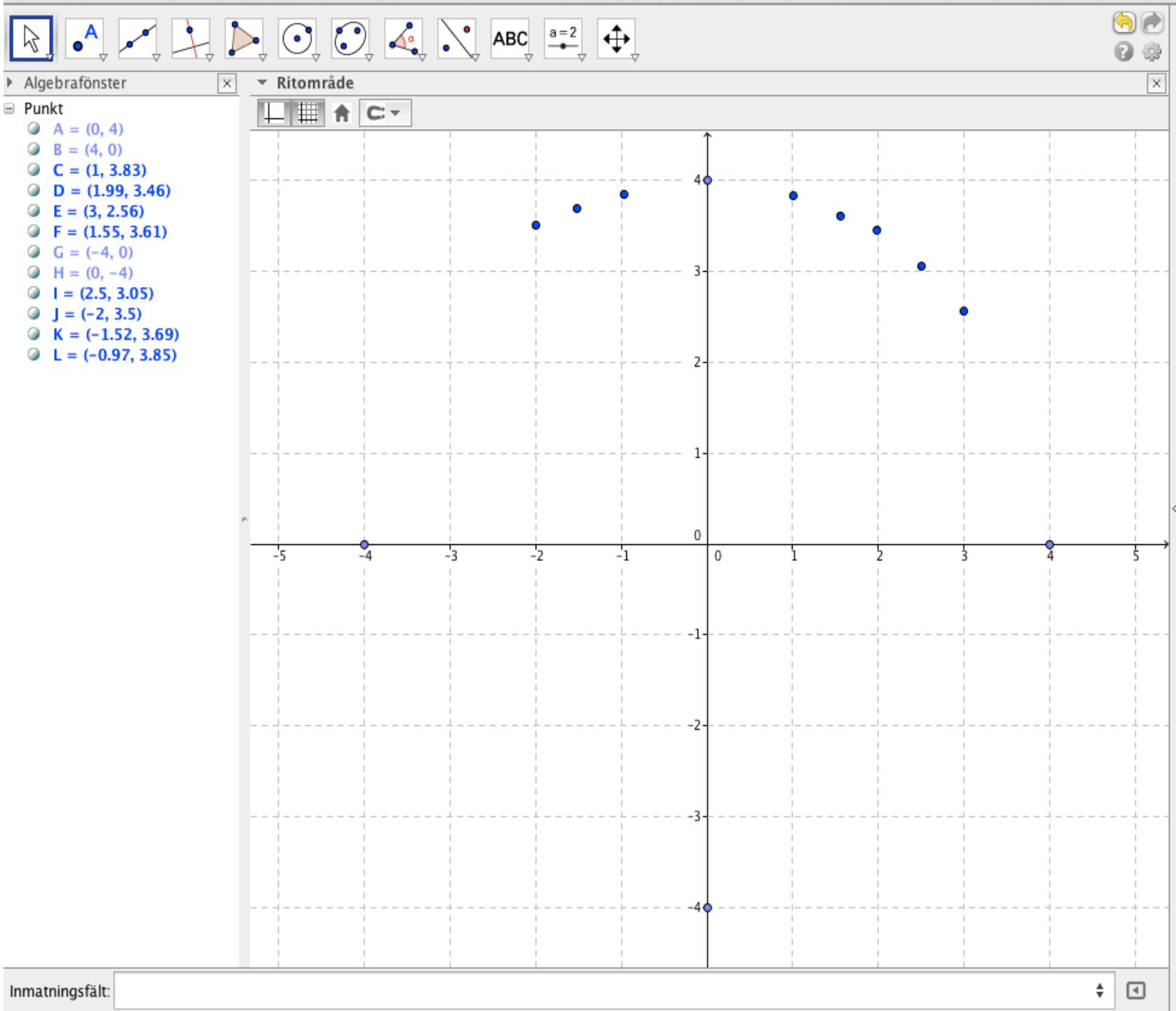
$(1,\sqrt{15})$

$(0,-4)$

$(-4,0)$

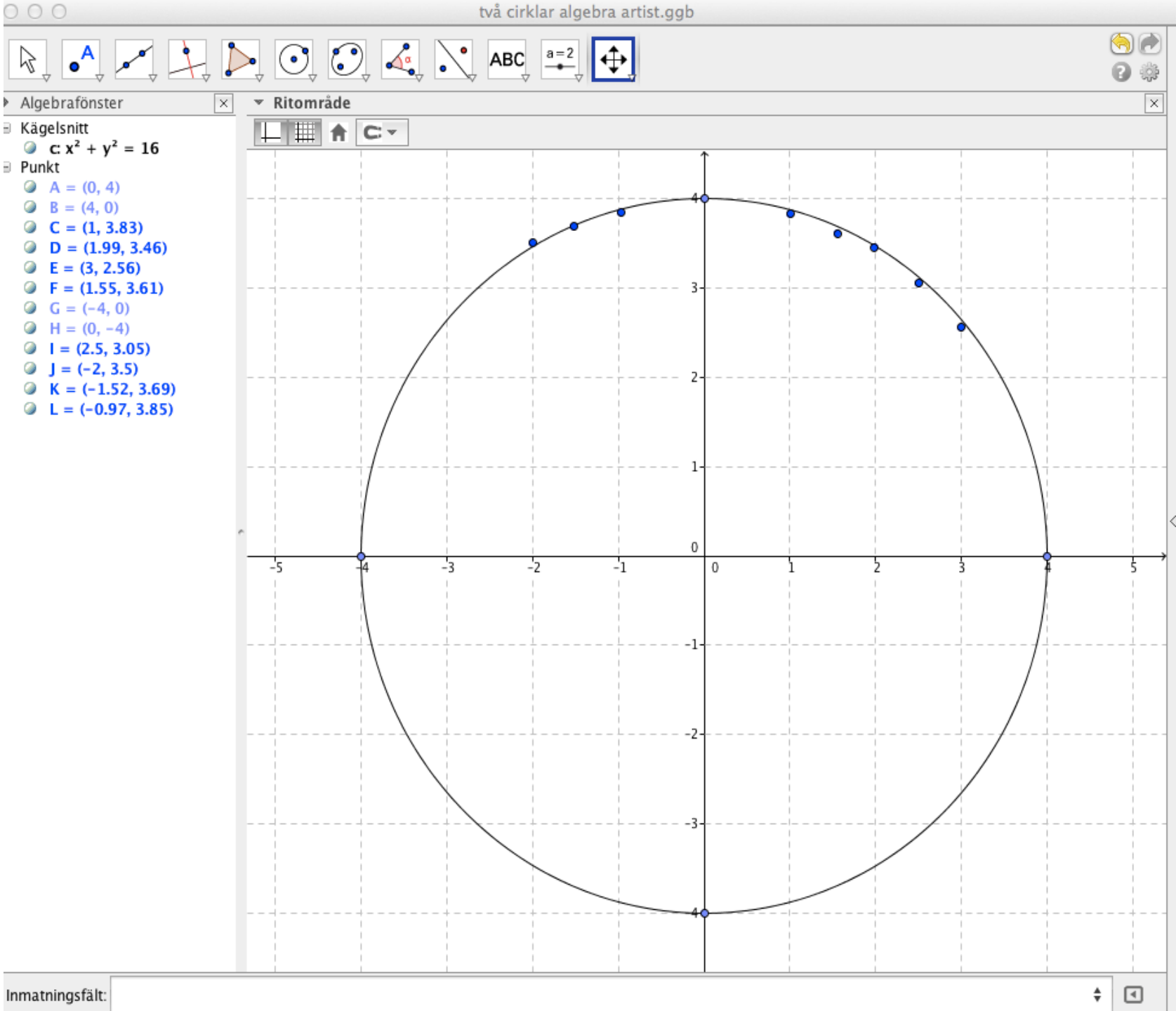
$(\sqrt{2},\sqrt{14})$

$(\sqrt{4},\sqrt{12})$



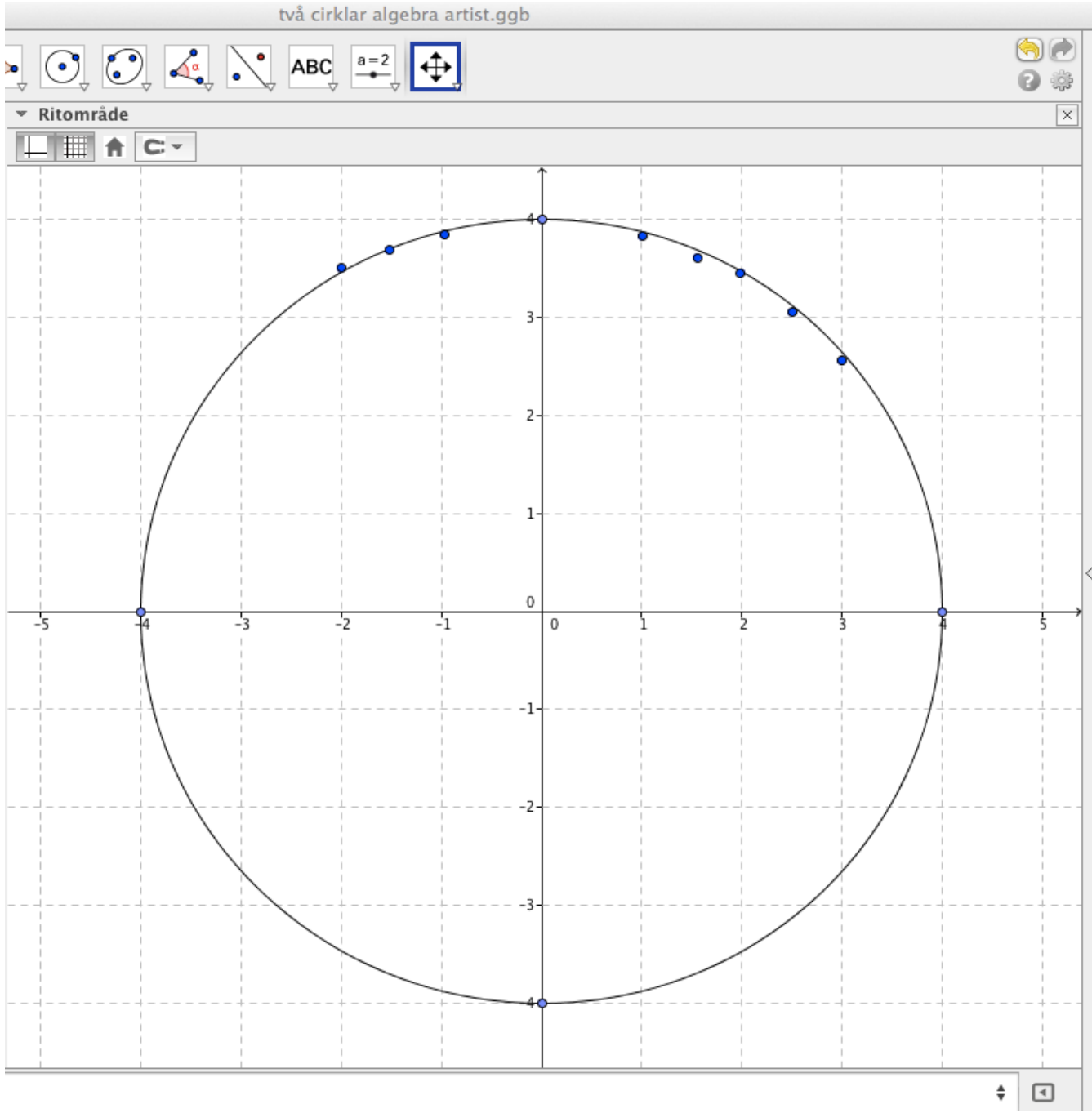
$$x^2 + y^2 = 16$$

(0,4)
(4,0)
$(1,\sqrt{15})$
(0,-4)
(-4,0)
$(\sqrt{2},\sqrt{14})$
$(\sqrt{4},\sqrt{12})$



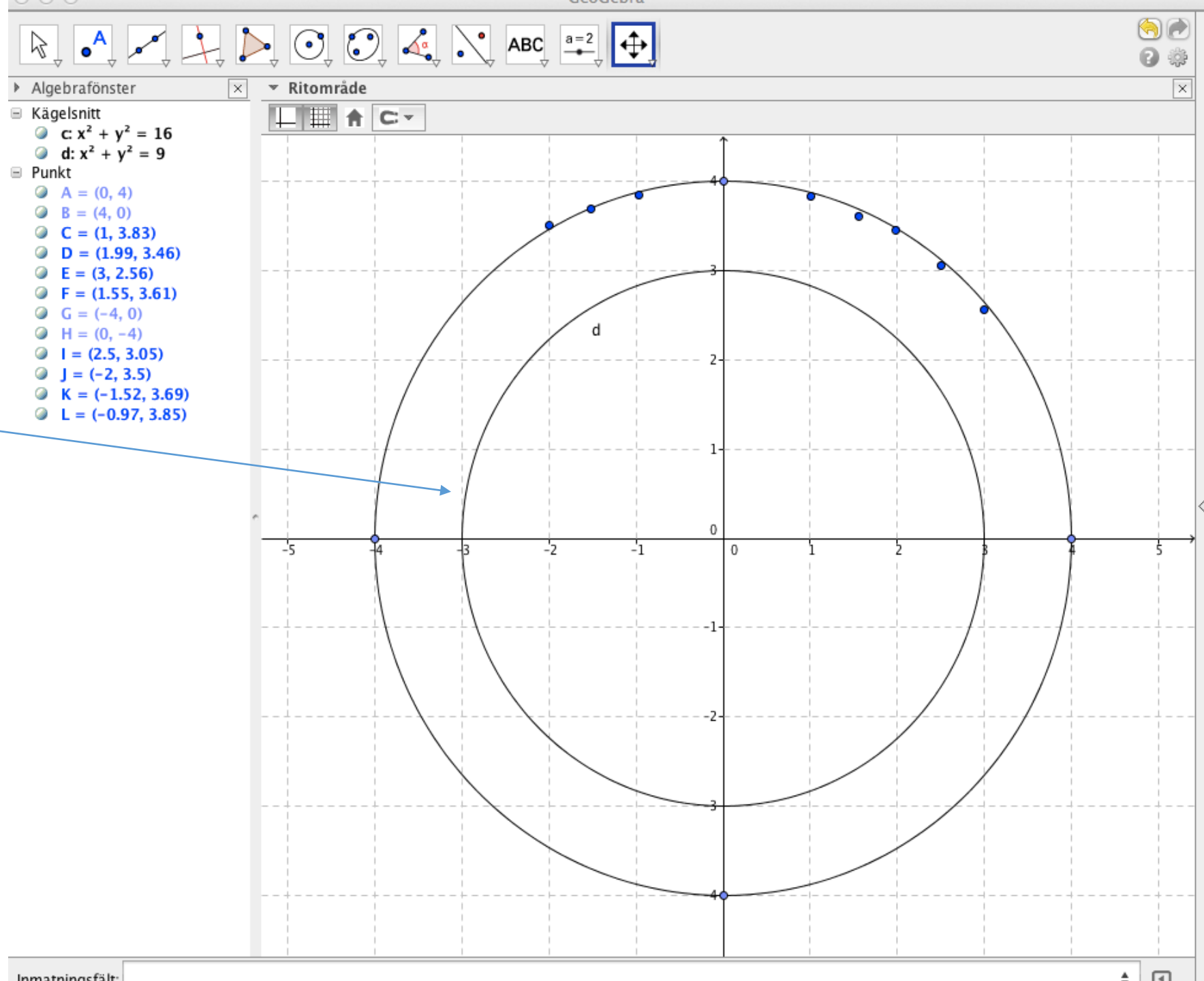
Vad tror ni händer om ekvationen istället för $x^2 + y^2 = 16$ är:

$$x^2 + y^2 = 9$$



$x^2 + y^2 = 16$

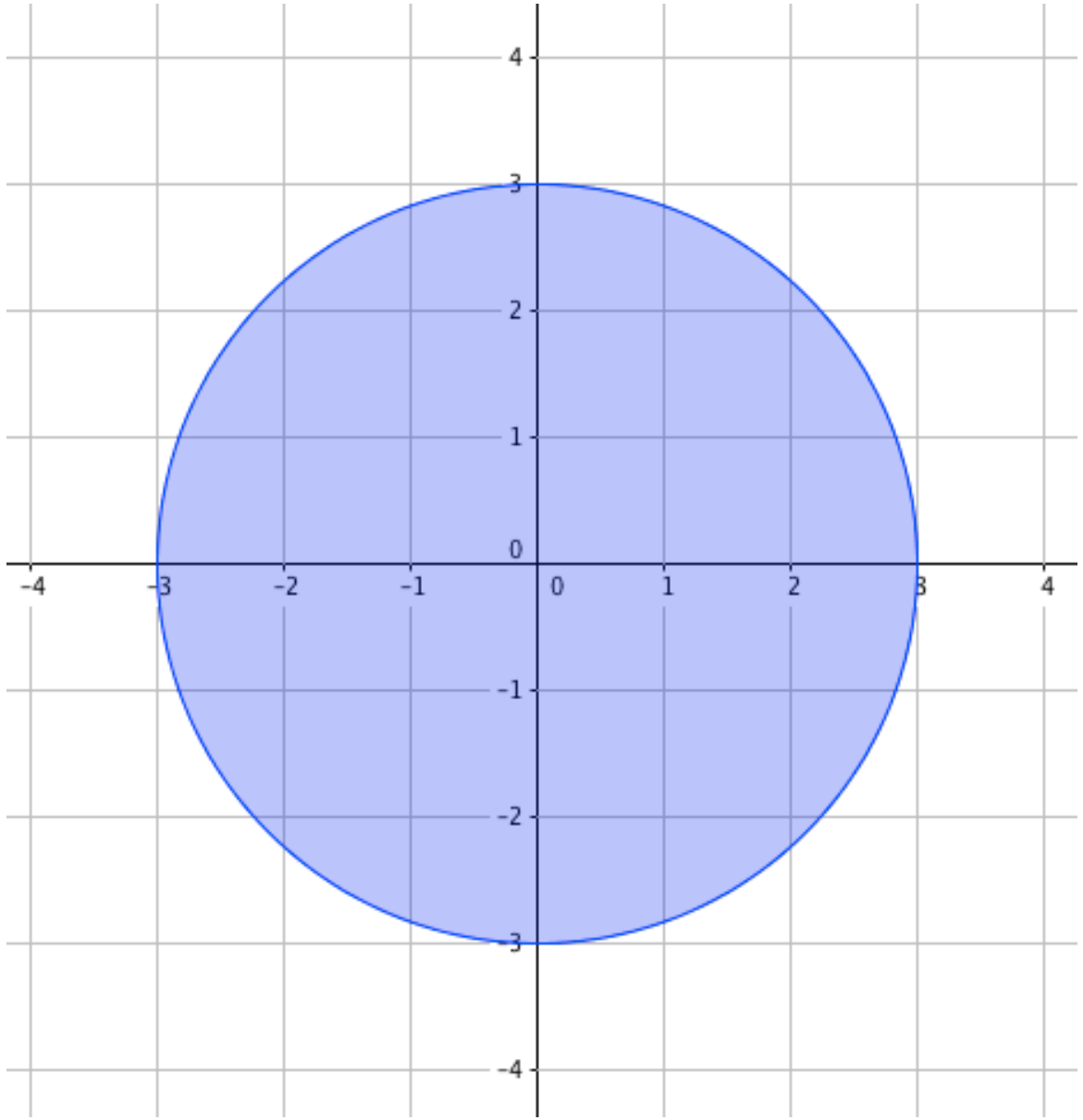
$x^2 + y^2 = 9$



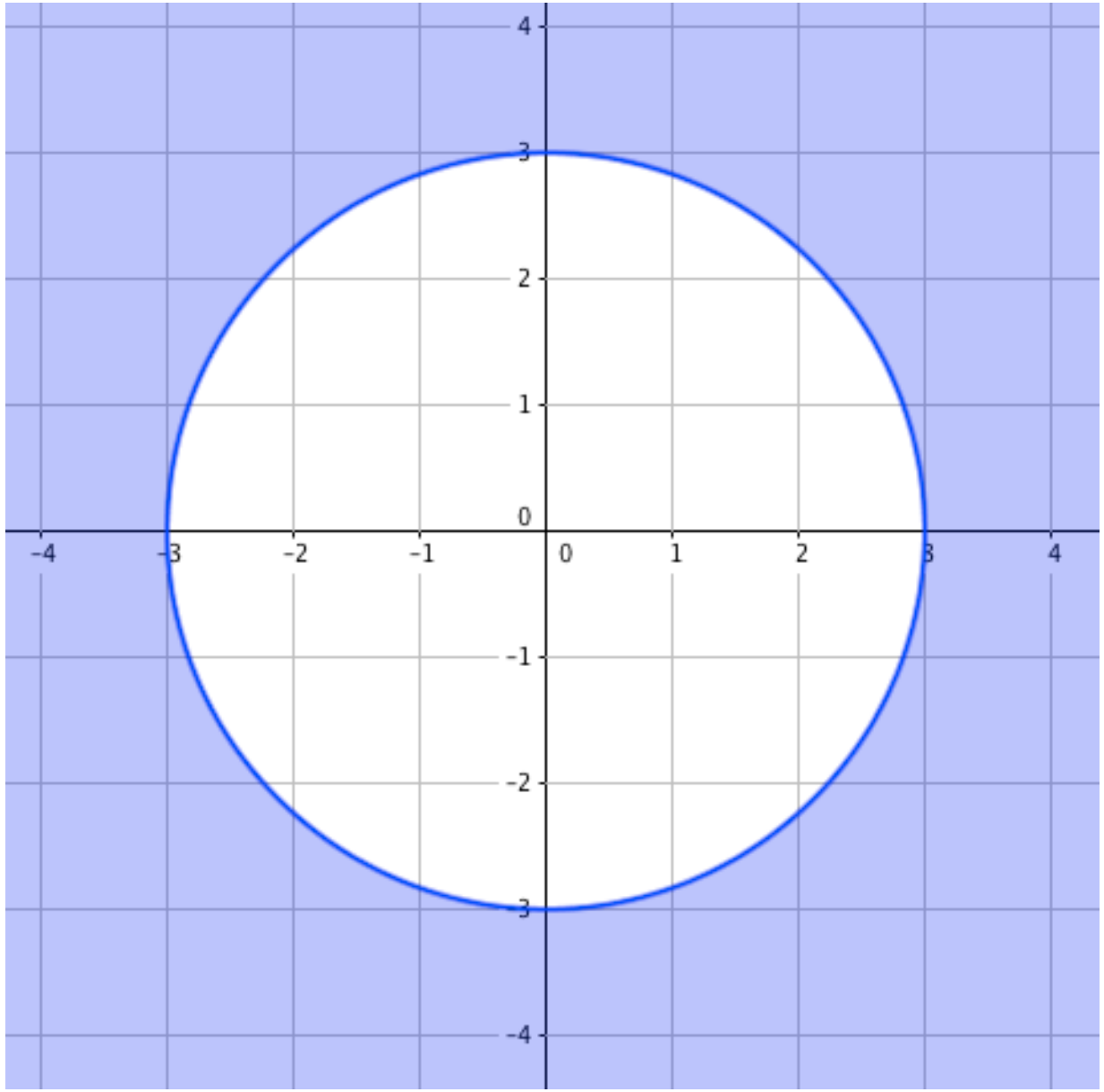
$x^2 + y^2 \leq 9$

$x^2 + y^2 \geq 9$

$x^2+y^2 \leq 9$



$x^2+y^2 \geq 9$



Lektion 2 (60 min) åk8

Repetera skillnader och likheter:

$y = 3x+2$

$y \leq 3x + 2$

$y > 3x + 2$

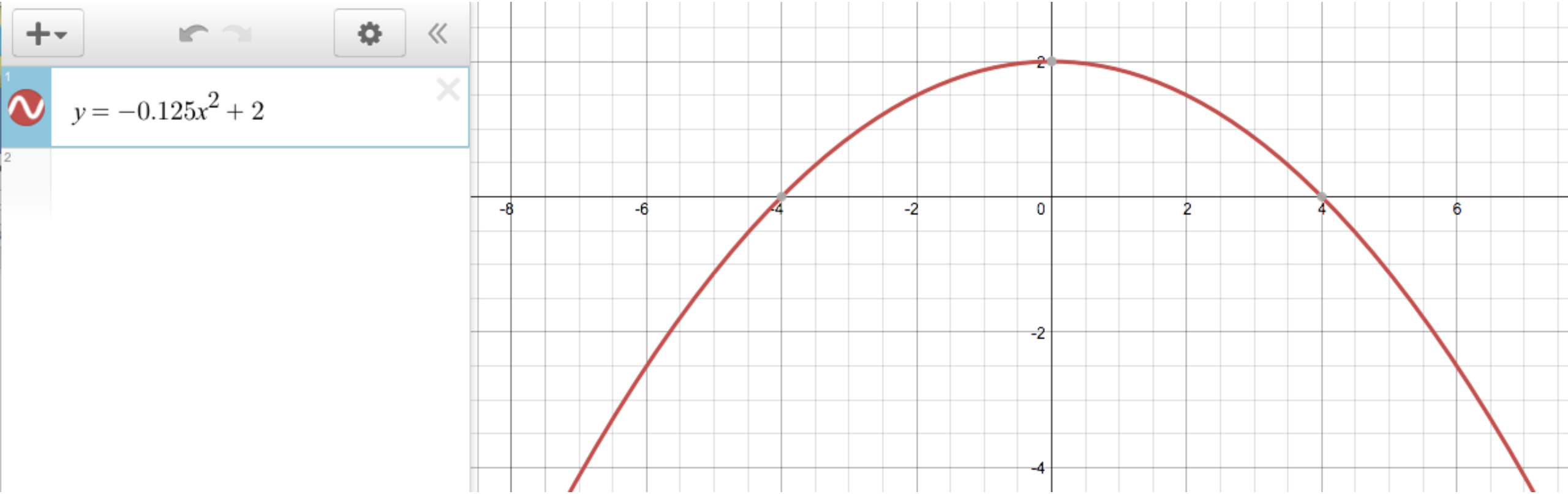
Vi funderade även igen på graferna för:

$x^2+y^2 = 9$

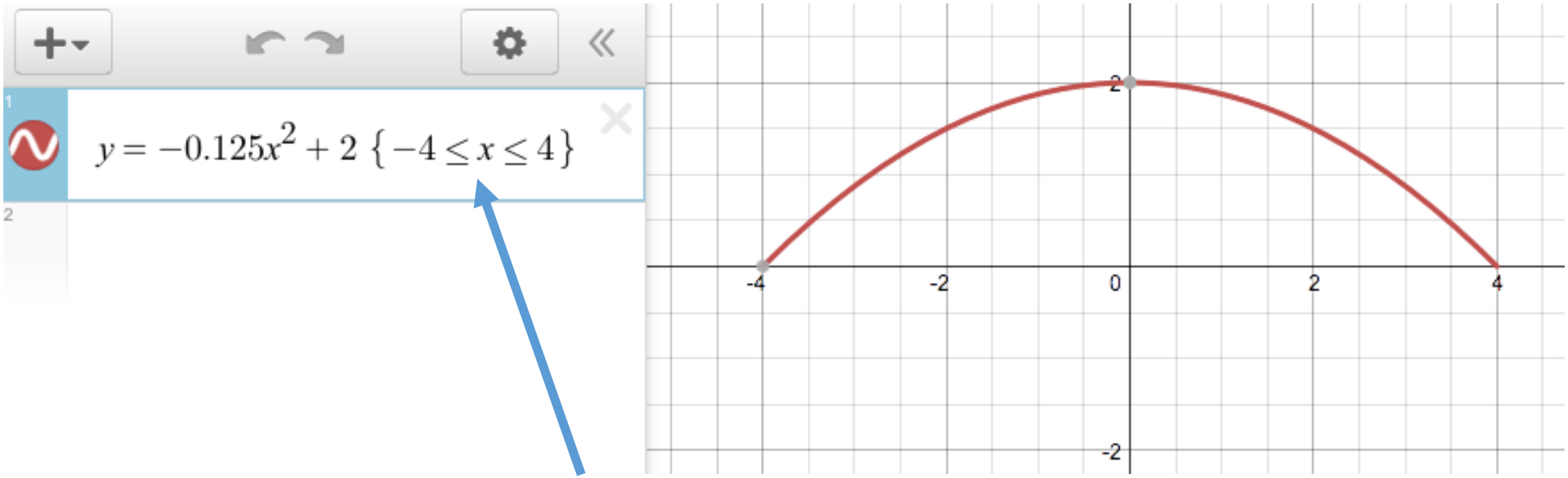
$x^2+y^2 = 25$ och

$x^2+y^2 \geq 4$

Definitionsmängd och värdemängd

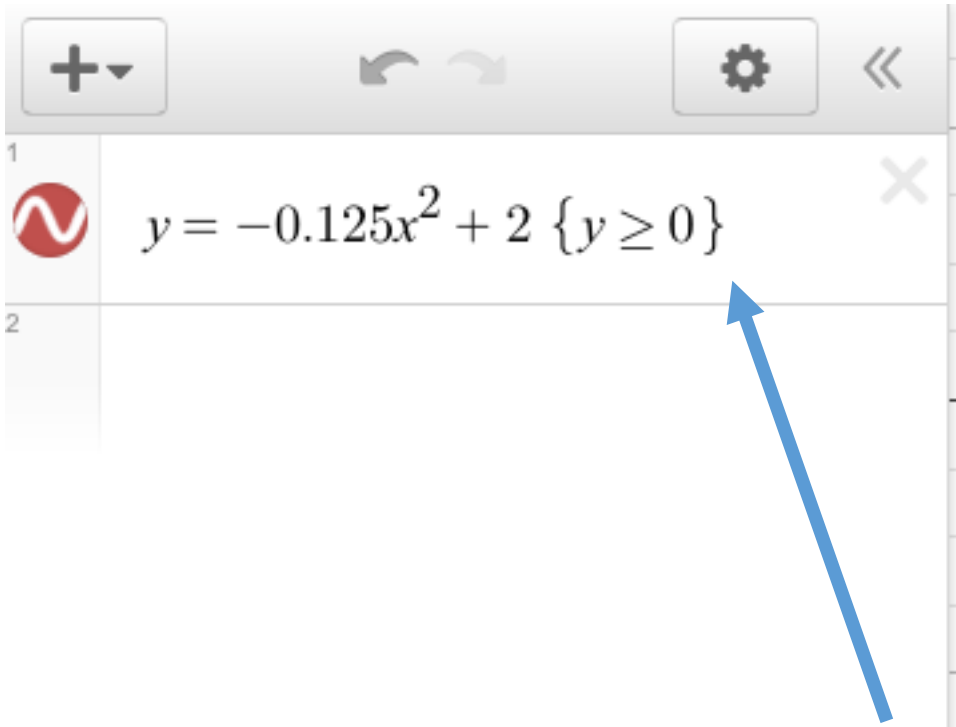


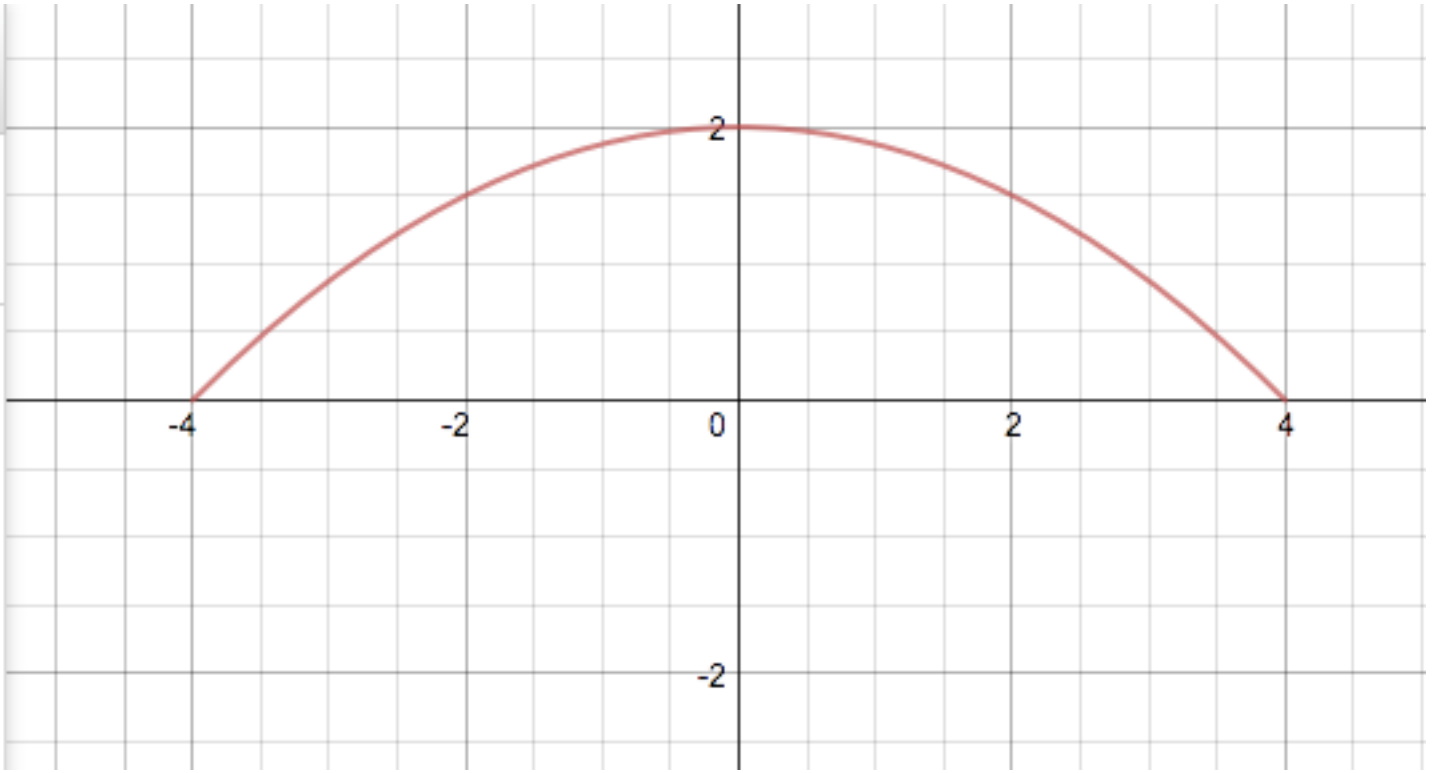
Definitionsmängd



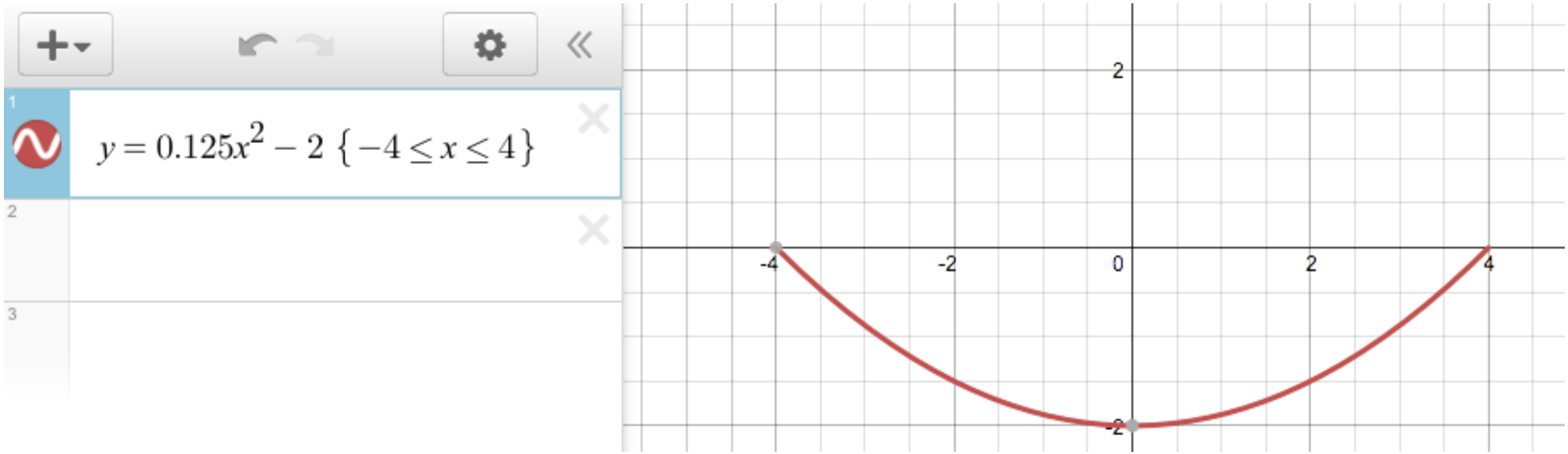
Alla x-värden för vilka funktionen gäller.

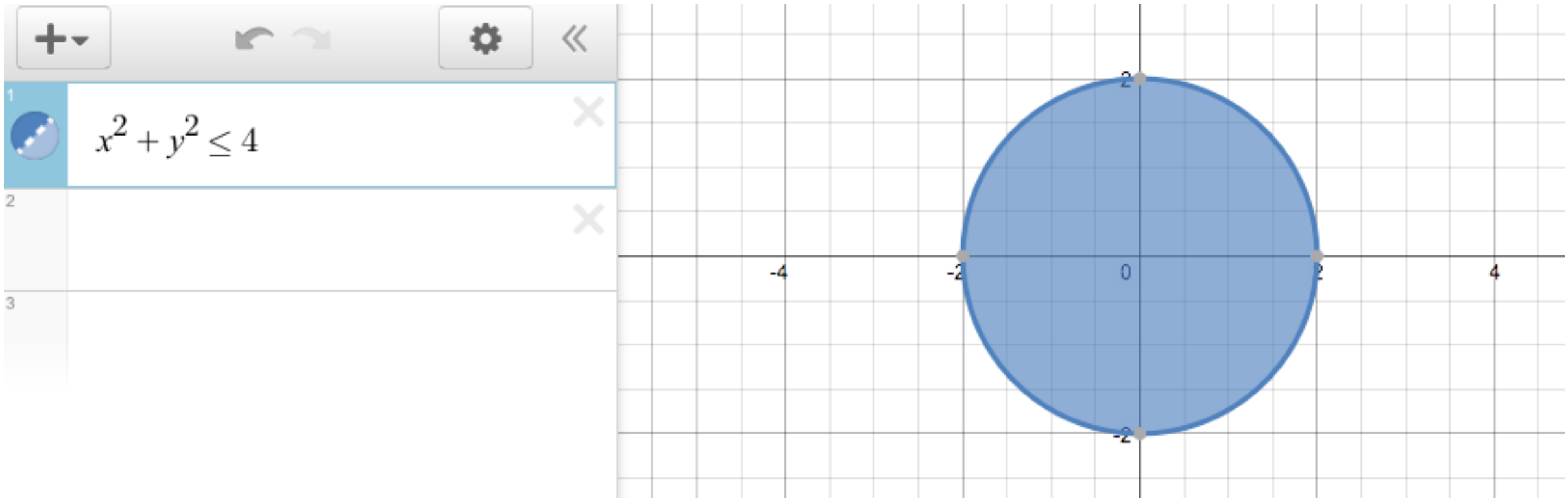
Värdemängd

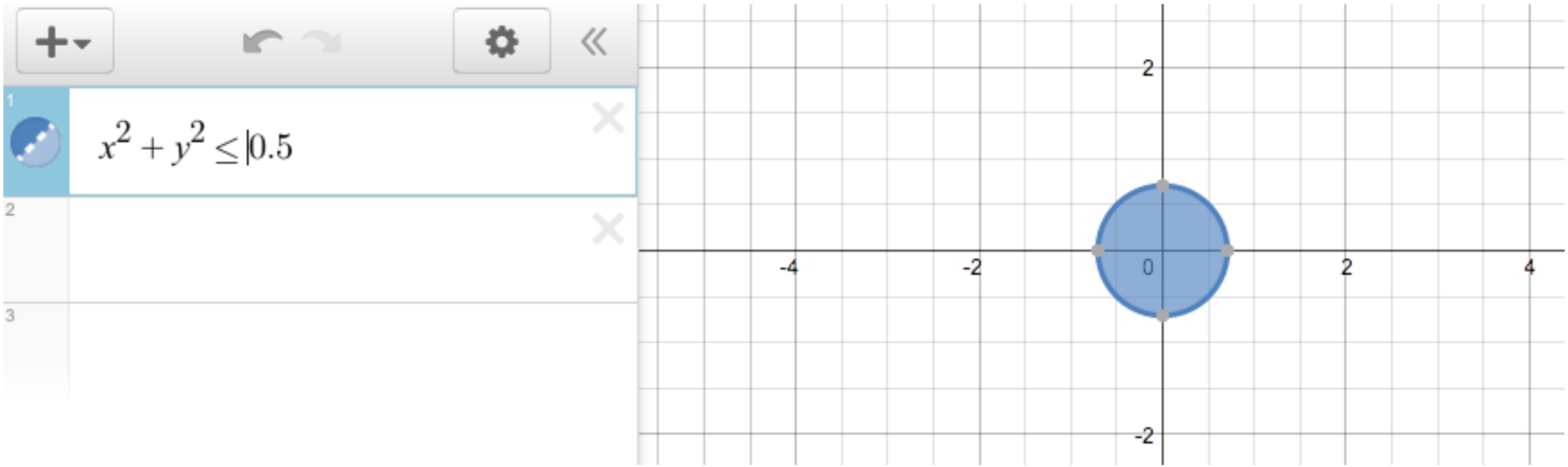




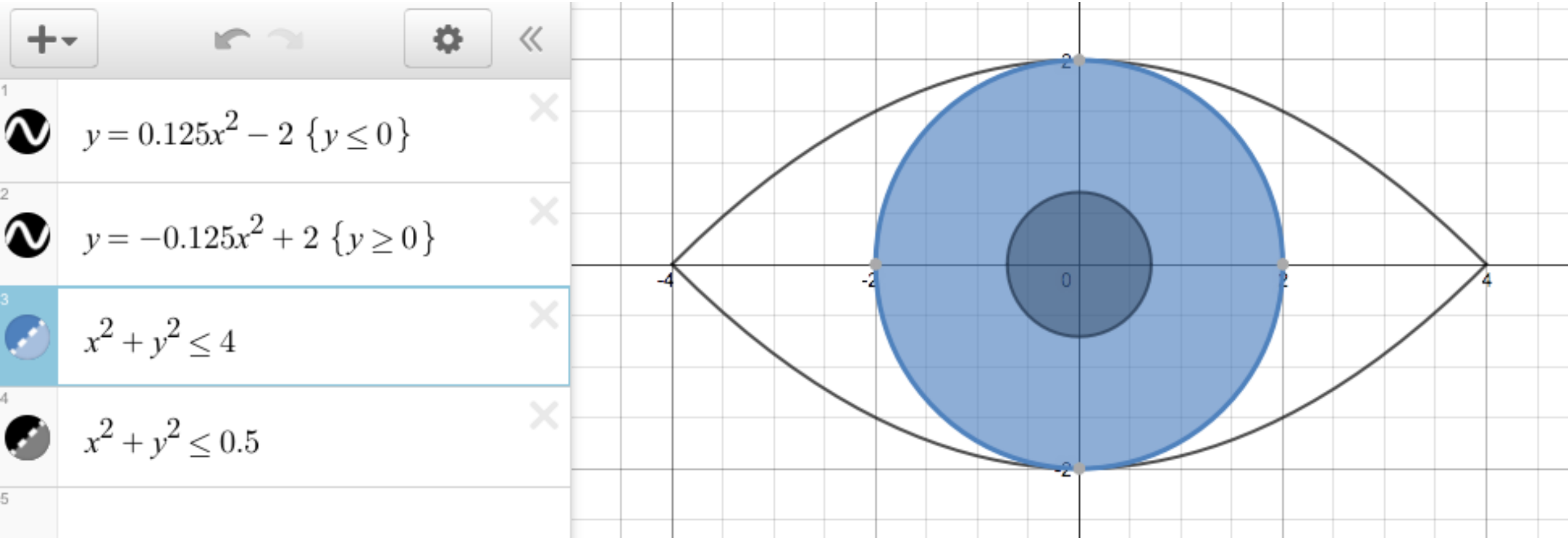
Alla y-värden för vilka funktionen gäller


1
$y = 0.125x^2 - 2 \{-4 \leq x \leq 4\}$
2
3
2
-4
-2
0
2
4
-2


1
$x^2 + y^2 \leq 4$
2
3
2
-4
-2
0
2
4
-2

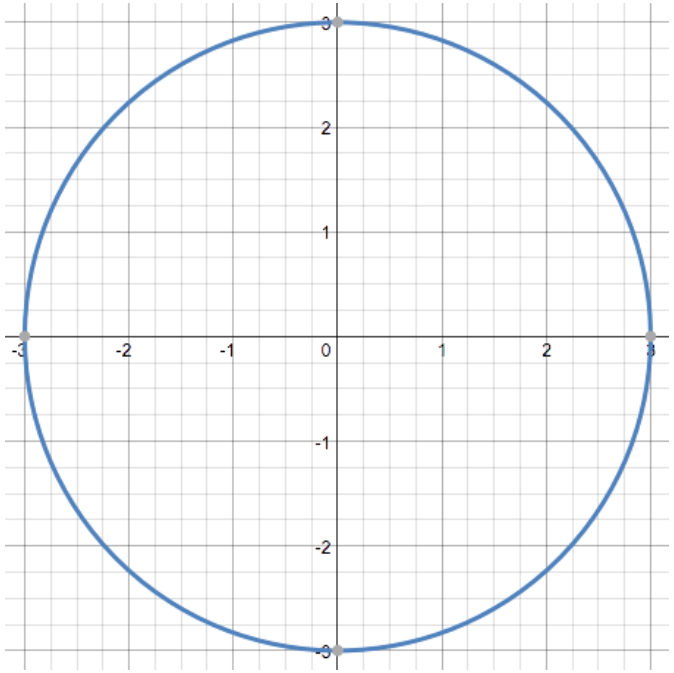

1
$x^2 + y^2 \leq |0.5$
2
3
2
-4
-2
0
2
4
-2

Vi sätter ihop dessa fyra grafer i samma koordinatsystem:

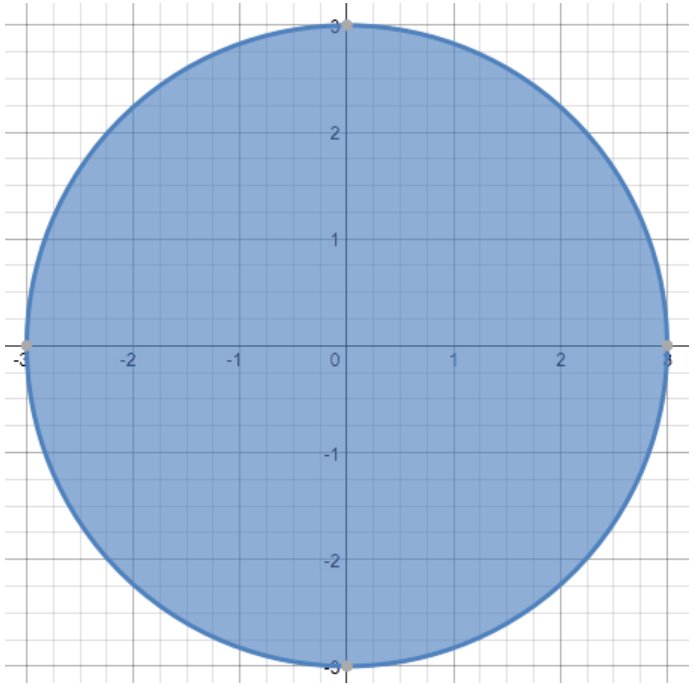


Sammanfattning

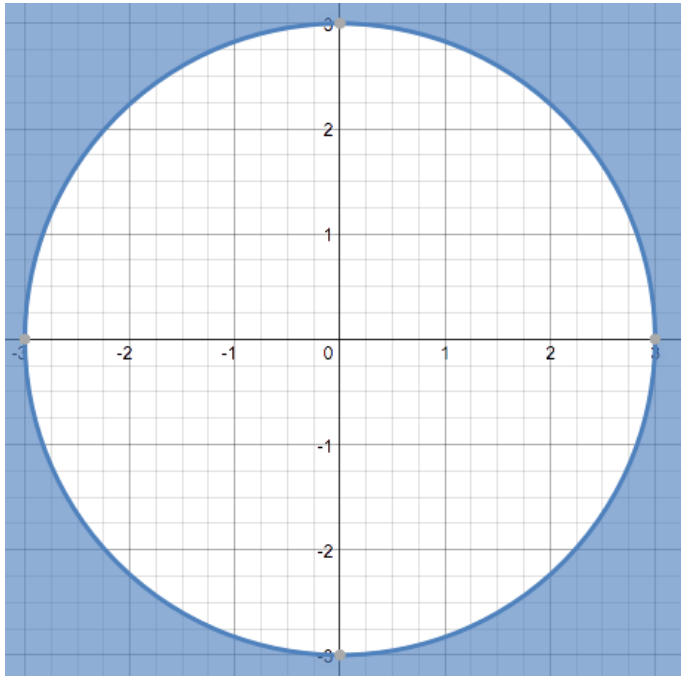
$x^2+y^2 = 9$



$x^2+y^2 \leq 9$



$x^2+y^2 \geq 9$



Gör din egen Algebra Teckning med Desmos

Ditt konstverk bör:

1. innehålla åtminstone 12 grafer.

2. vara originell, kreativ och konstnärlig.

3. vara tekniskt mångsidig(olika typer av grafer: t. ex. linjer, parabler, absolut värde grafer, cirklar, ellipser, kvadratrot grafer och enkla polynom)

4. arbeta med begränsningar i värdemängd, definitionsmängd och olikheter.

Lektion 3 (60 min) åk8

Grundligare genomgång av definitions- och värdemängd

Vi påminde igen om vikten av att vara inloggad på Desmos för att spara arbetet regelbundet.

Arbeta vidare med konstverket.

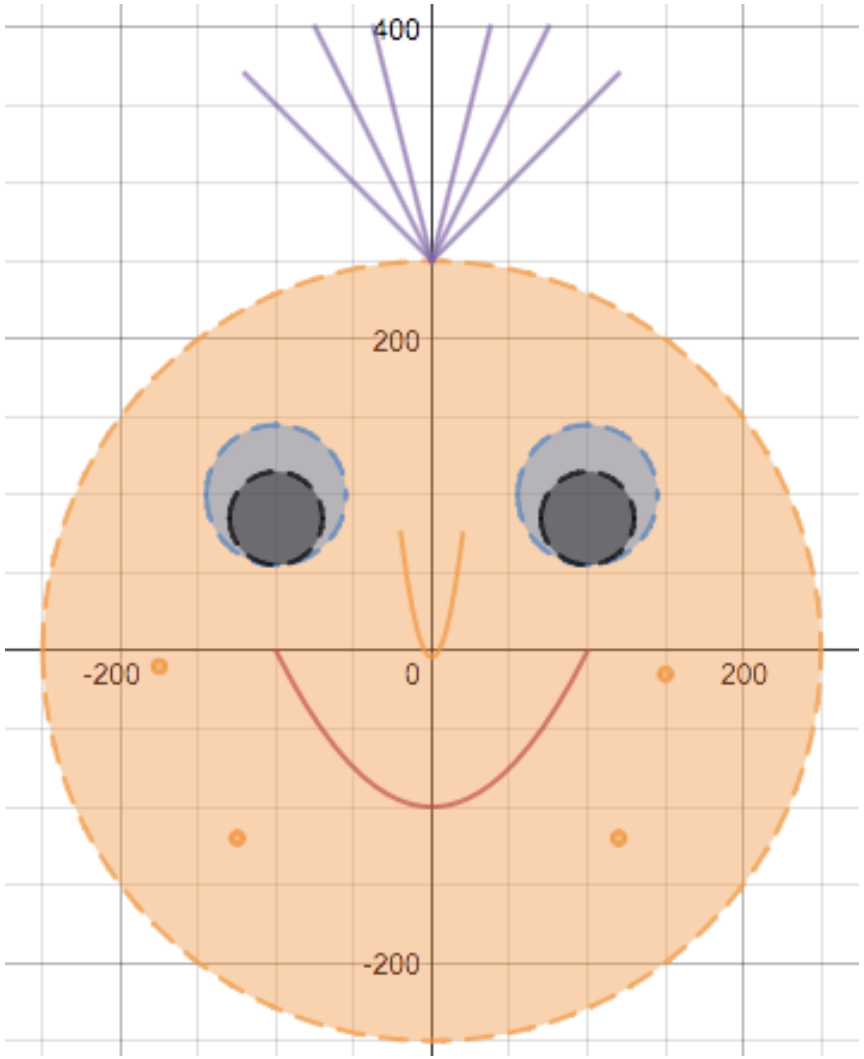
Lektion 4 (60 min) åk8

Arbeta vidare med konstverket.

Eleverna börjar skriva rapporten.

Konstverk åk 8

Smiley



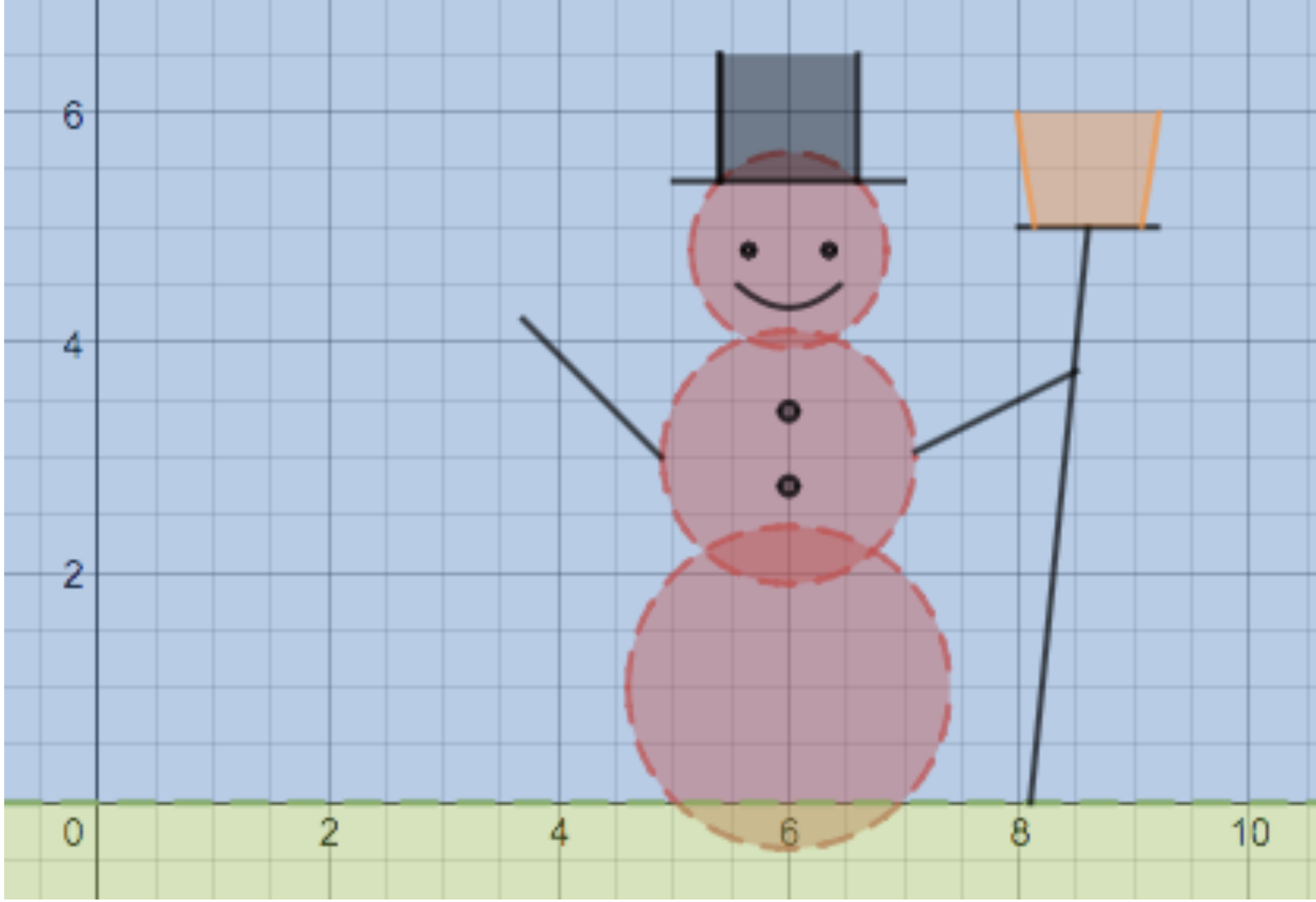
”Smiley”, både manlig och kvinnlig med hår rakt upp/ut, jag har utvecklat den med 4 fräknar.

Jag övervägde mellan ”Gubben” och ”Smiley” men jag tycker att smiley verkar bättre eftersom den är jätteglad!!! :)

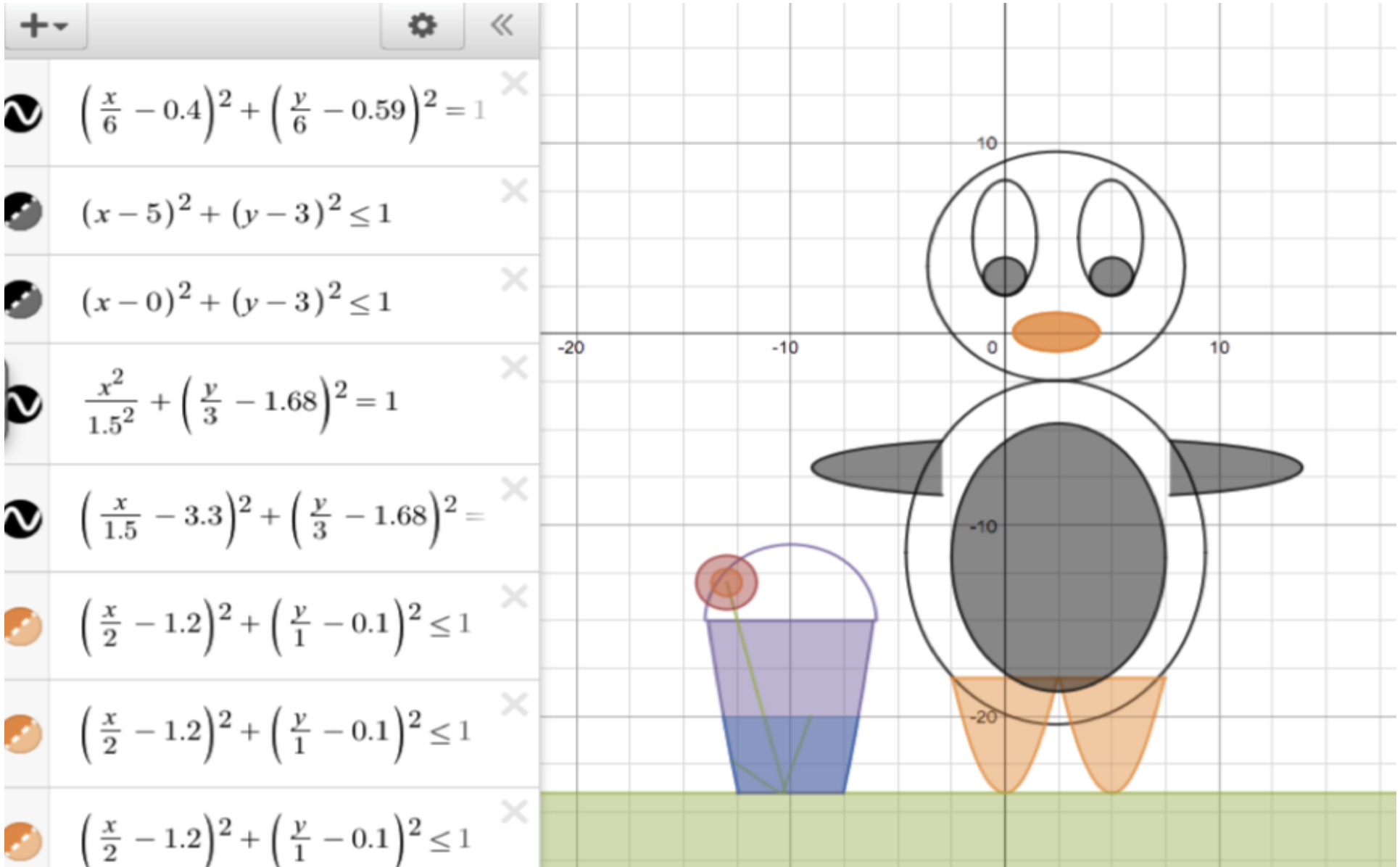
Röd snögubbe

Snögubben har inslag från både vinter och sommar.

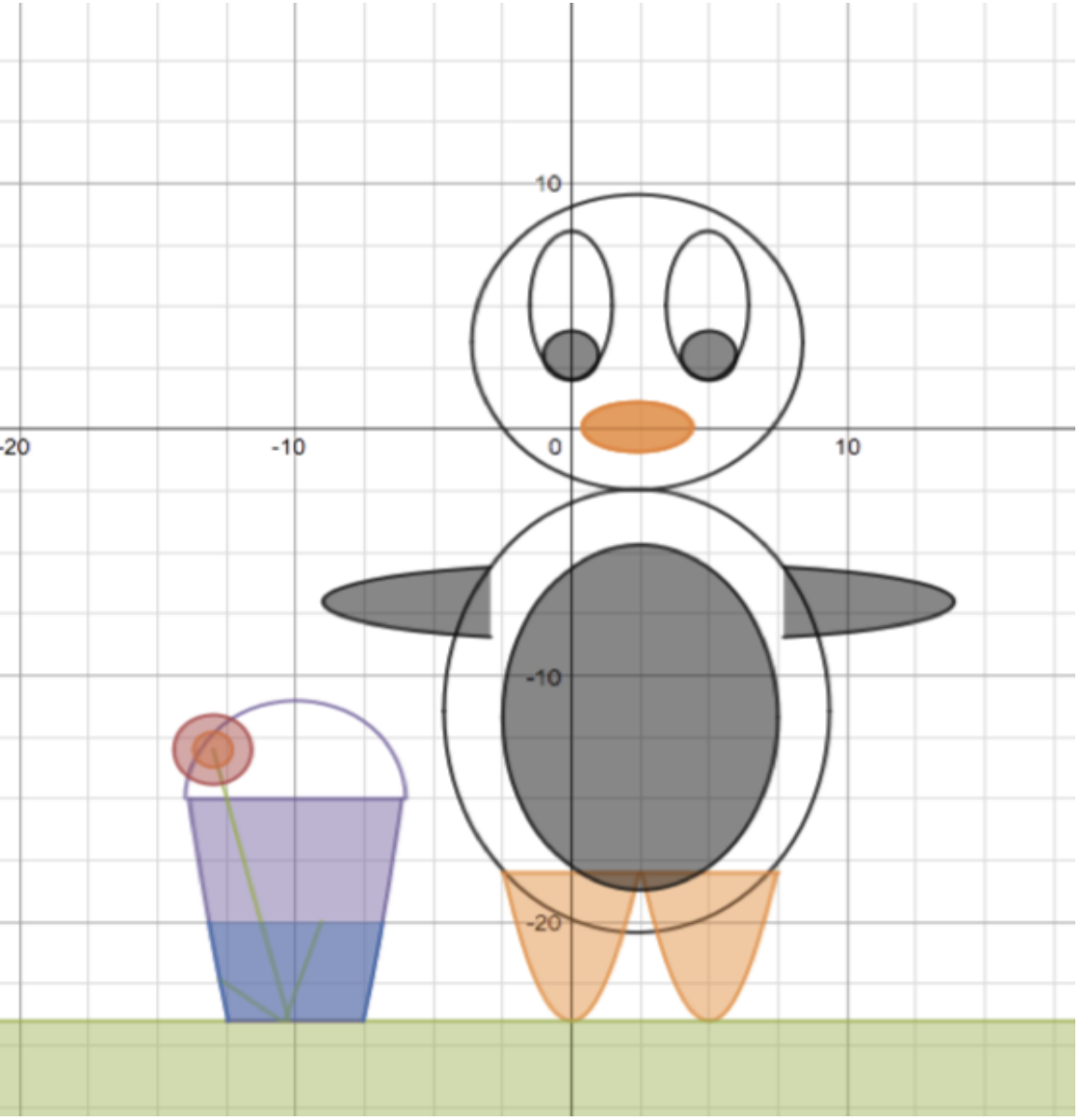
För att färglägga bakgrunden, snögubbens kropp, hatt och borste använde jag mig av olikheter.



Pingvinen i parken



Pingvinen i parken



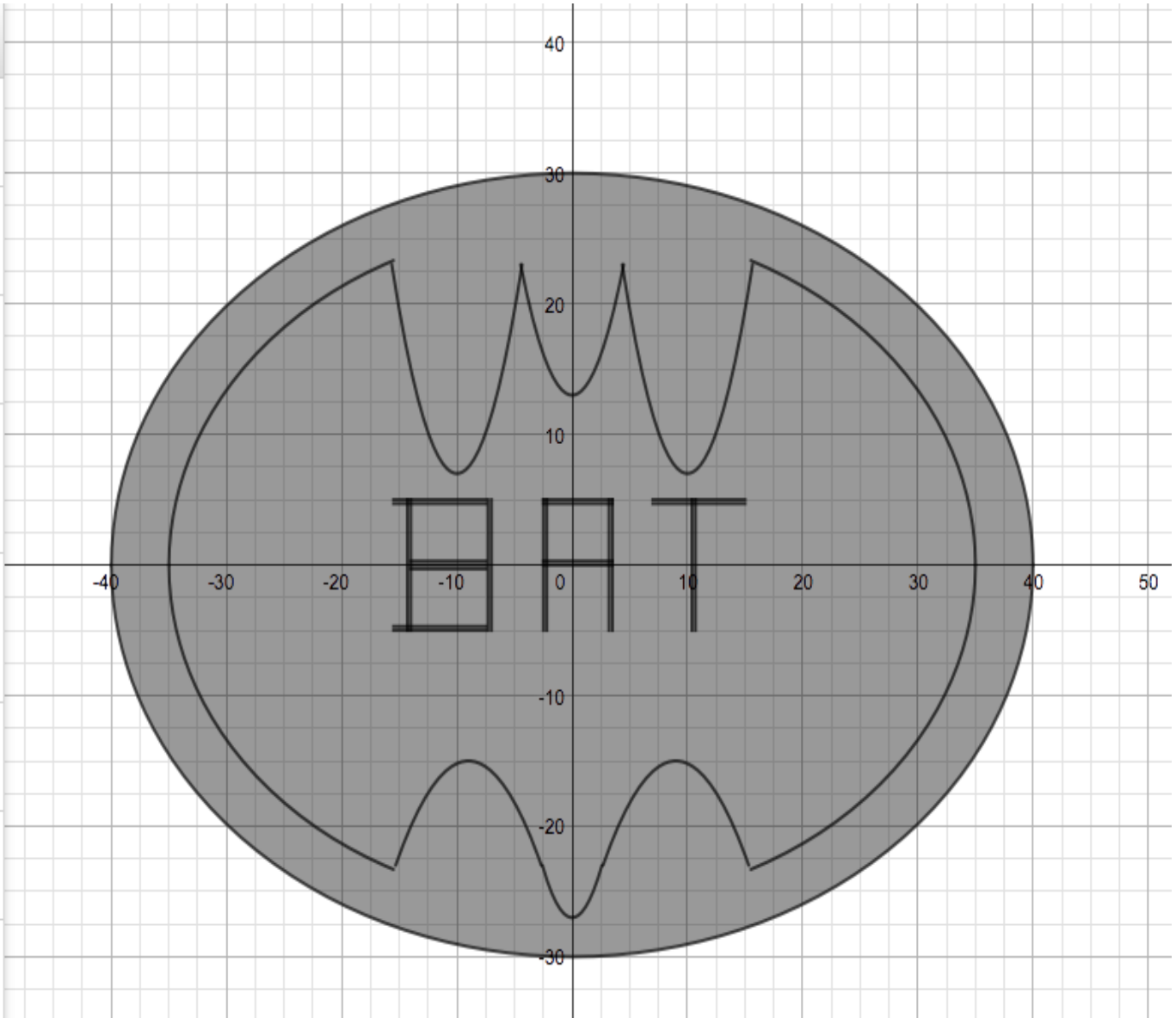
- Jag lärde mig hur man ska använda begränsningar i både definitionsmängd och värdemängd för att ge bilden ett annat uttryck.

- Jag lärde mig också hur man flyttar olika saker i graferna och att förstå formler samt påverka dem så att man får vad man vill.

Batman-Logo

Jag tänkte på att göra något enkelt fast fortfarande någonting snyggt och coolt.

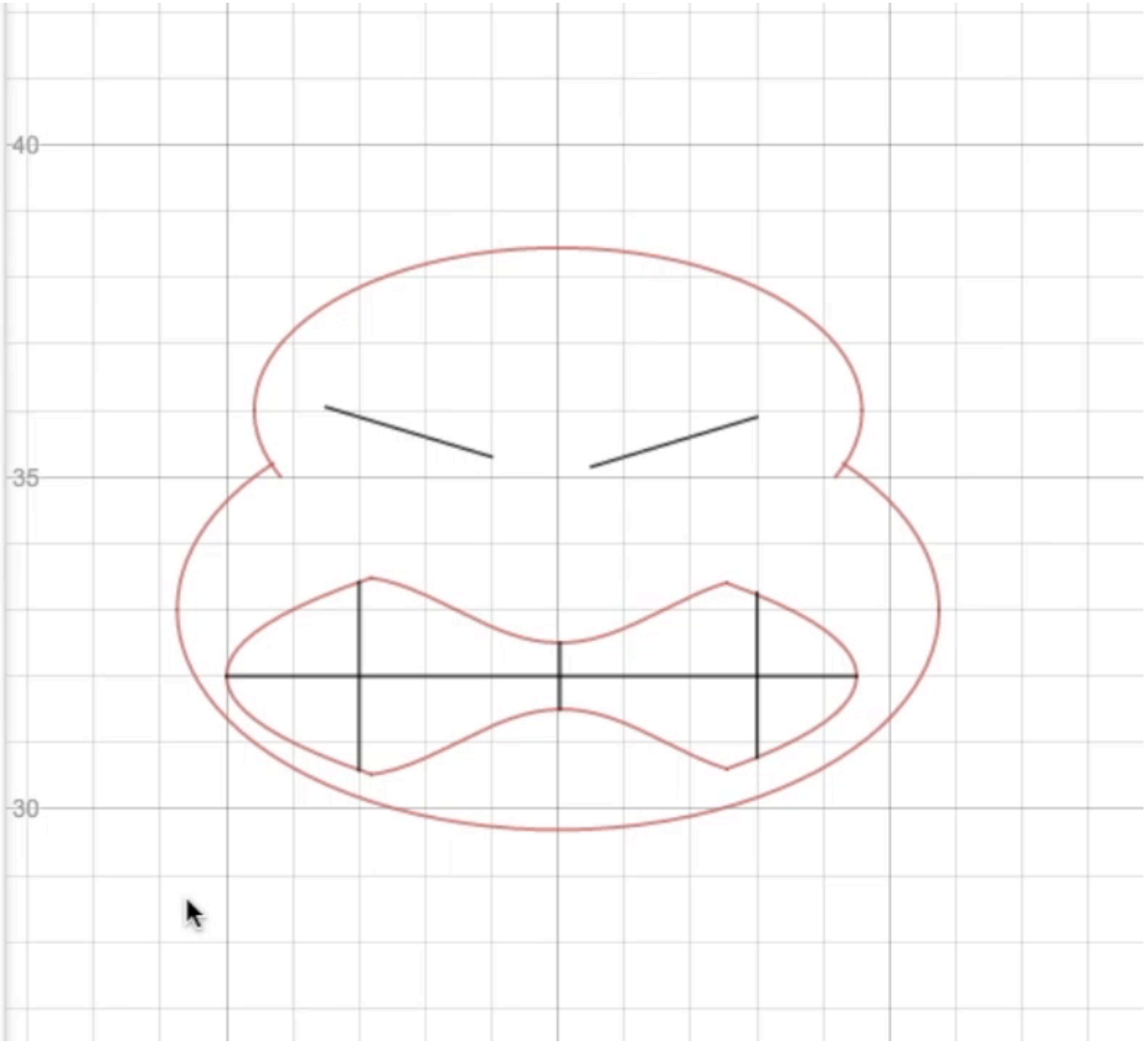
1. $y = 0.5x^2 + 0 + 13\{y \leq 23\}$
2. $y = 0.5(x - 10)^2 + 7\{y \leq 23\}$
3. $y = 0.5(x + 10)^2 + 7\{y \leq 23\}$
4. $\frac{x^2}{35^2} + \frac{y^2}{26^2} = 1\{x \leq -15.5\}$
5. $\frac{x^2}{35^2} + \frac{y^2}{26^2} = 1\{x \geq 15.5\}$
6. $y = 0.6x^2 + 0 + -27\{y \leq -23\}$
7. $y = -0.2(x - 9)^2 - 15\{y \geq -2$
8. $y = -0.2(x + 9)^2 - 15\{y \geq -2$



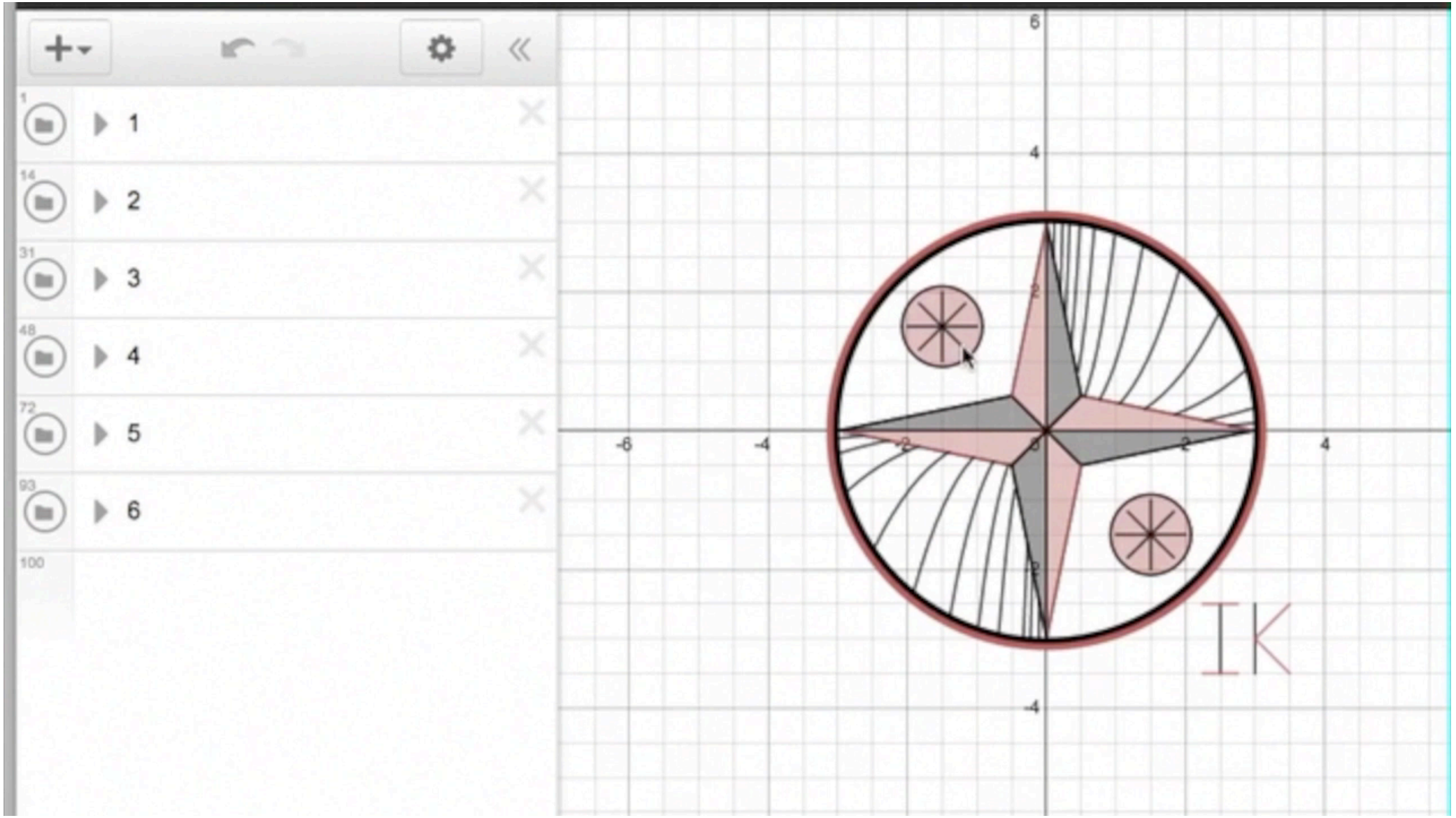
Konstverk åk 9

Den arga Sköldpaddan

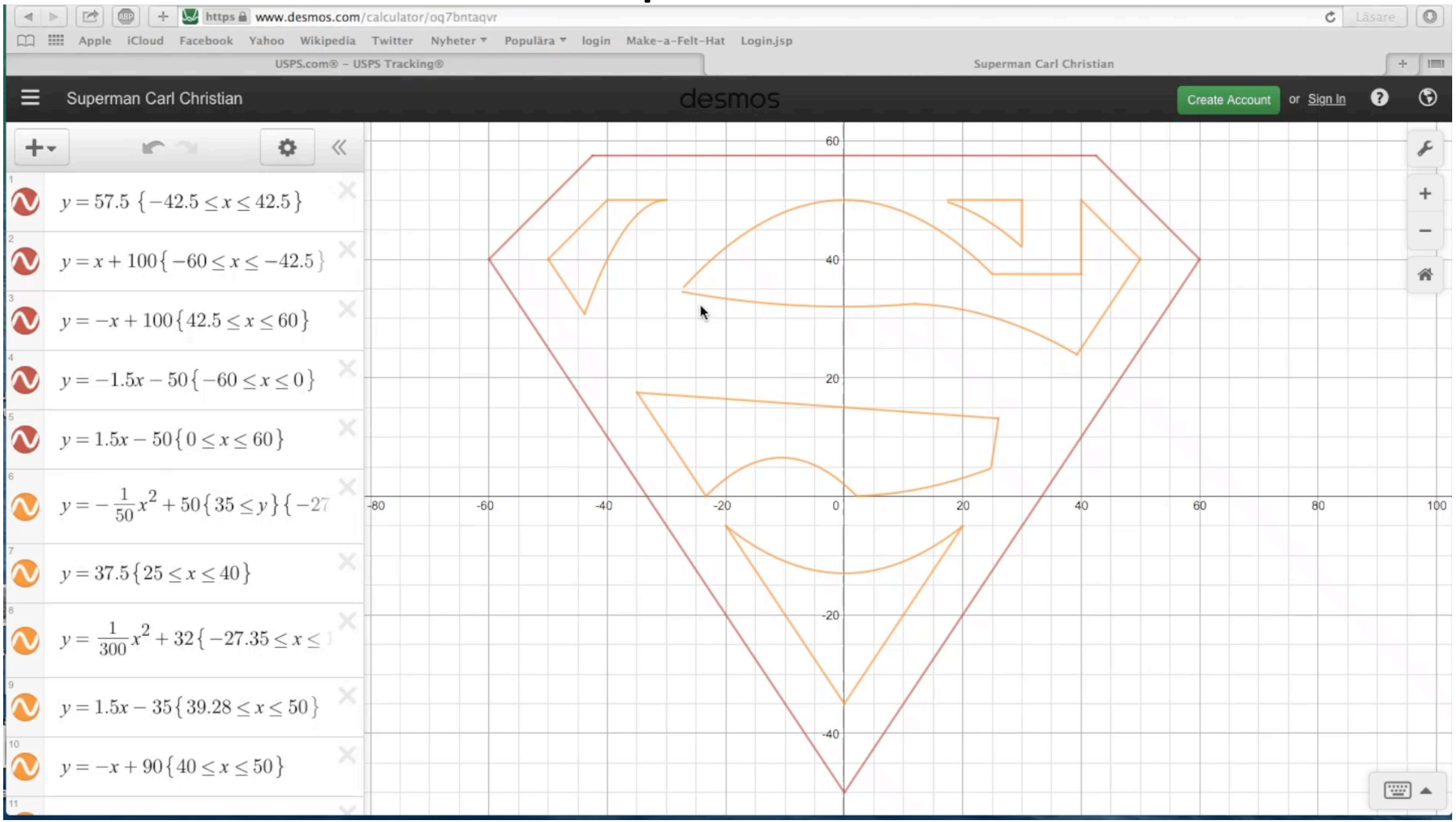
1. $\frac{(x-15)^2}{14} + \frac{(y-36)^2}{4} = 1.5\{$
2. $\frac{(x-15)^2}{12} + \frac{(y-33)^2}{4} = 2.75$
3. $y = 0.5\cos(x-5.6) + 33\{12.$
4. $y = 0.5\sin(x-7.2) + 31\{12.$
5. $y = -\sqrt{x-10} + 32\{x < 12.1$
6. $y = \sqrt{x-10} + 32\{x < 12.18$
7. $y = \sqrt{-(x-19.5)} + 32\{x >$
8. $y = -\sqrt{-(x-19.5)} + 32\{x$

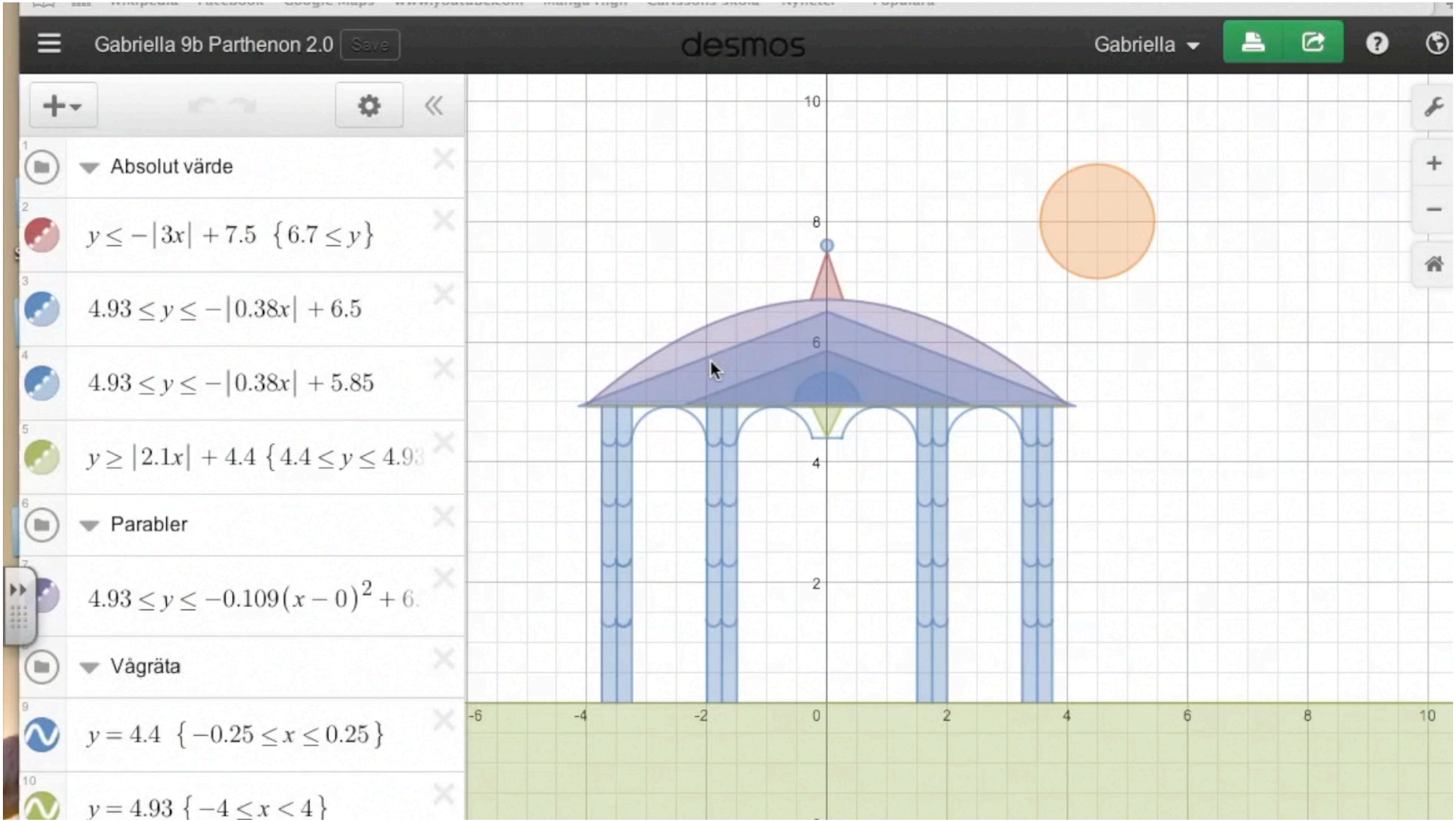


Kompassen



Supermen


https www.desmos.com/calculator/oq7bntaqvr
Läsare
Apple iCloud Facebook Yahoo Wikipedia Twitter Nyheter Populära login Make-a-Felt-Hat Login.jsp
USPS.com® – USPS Tracking®
Superman Carl Christian
Superman Carl Christian
desmos
Create Account or Sign In
1 $y = 57.5 \{-42.5 \le x \le 42.5\}$
2 $y = x + 100 \{-60 \le x \le -42.5\}$
3 $y = -x + 100 \{42.5 \le x \le 60\}$
4 $y = -1.5x - 50 \{-60 \le x \le 0\}$
5 $y = 1.5x - 50 \{0 \le x \le 60\}$
6 $y = -\frac{1}{50}x^2 + 50 \{35 \le y\} \{-27$
7 $y = 37.5 \{25 \le x \le 40\}$
8 $y = \frac{1}{300}x^2 + 32 \{-27.35 \le x \le$
9 $y = 1.5x - 35 \{39.28 \le x \le 50\}$
10 $y = -x + 90 \{40 \le x \le 50\}$
11
60
40
20
-20
-40
-80
-60
-40
-20
0
20
40
60
80
100

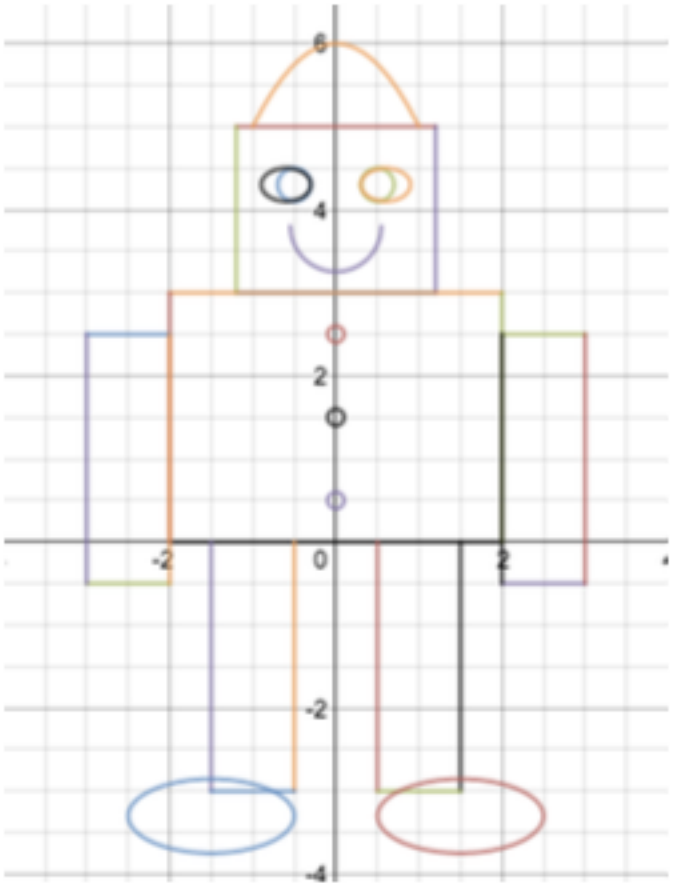

Gabriella 9b Parthenon 2.0
Save
desmos
Gabriella
Absolut värde
$y \le -|3x| + 7.5 \ \{6.7 \le y\}$
$4.93 \le y \le -|0.38x| + 6.5$
$4.93 \le y \le -|0.38x| + 5.85$
$y \ge |2.1x| + 4.4 \ \{4.4 \le y \le 4.93$
Parabler
$4.93 \le y \le -0.109(x-0)^2 + 6.$
Vågräta
$y = 4.4 \ \{-0.25 \le x \le 0.25\}$
$y = 4.93 \ \{-4 \le x < 4\}$
10
8
6
4
2
-6
-4
-2
0
2
4
6
8
10

Arbeta vidare …

Para ihop rätt ekvation med del på bilden

1. $y = 5\{-1.2 < x < 1.2\}$
2. $y = 3\{-1.2 < x < 1.2\}$
3. $x = -1.2\{3 < y < 5\}$
4. $x = 1.2\{3 < y < 5\}$
5. $y = 3\{-2 < x < 2\}$
6. $y = 0\{-2 < x < 2\}$
7. $x = -2\{0 < y < 3\}$
8. $x = 2\{0 < y < 3\}$
9. $x = -1.5\{-3 < y < 0\}$
10. $x = -0.5\{-3 < y < 0\}$
11.

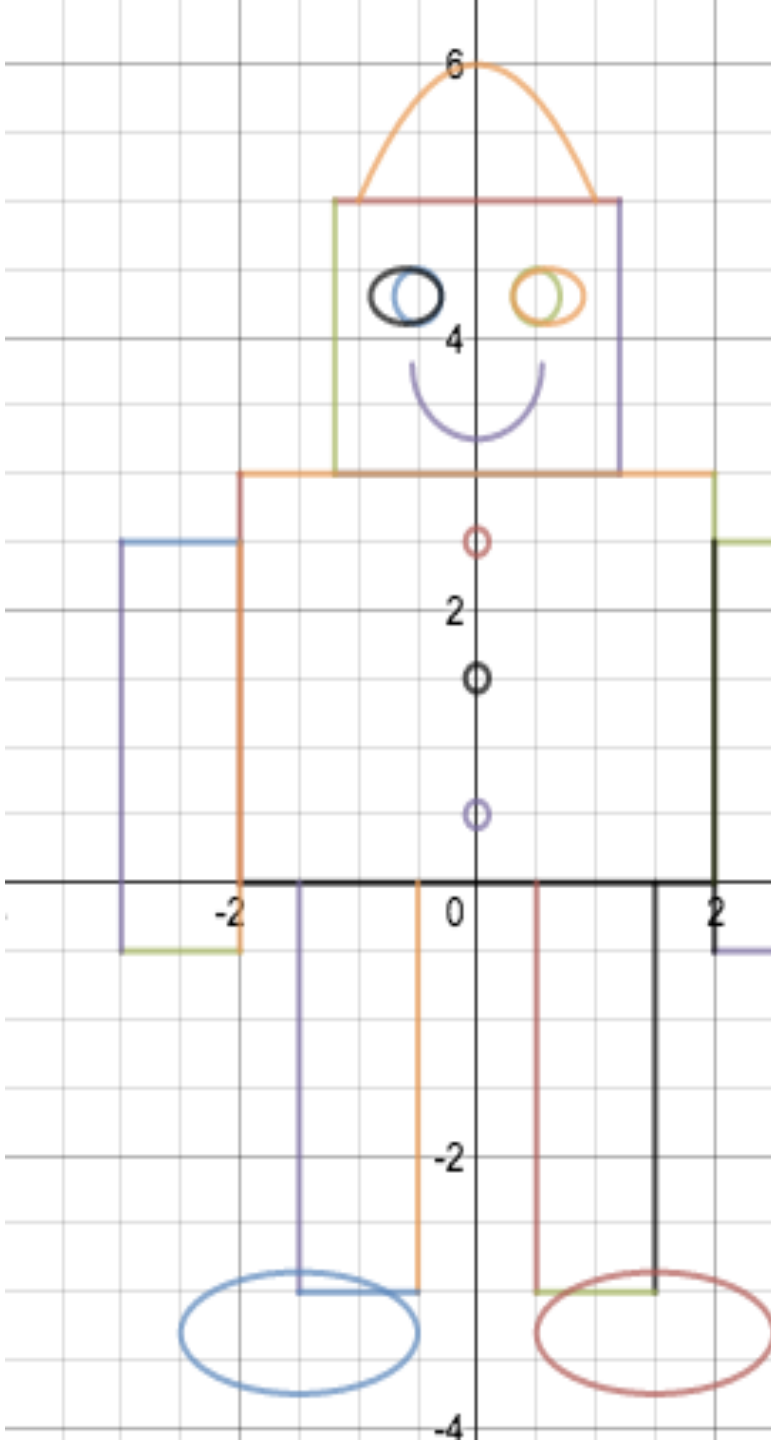
31. $y = -1(x-0)^2 + 6\{-1 < x <$
32. $y = 2x + 4.3\{-0.25 < x < 0\}$
33. $y = 3.8\{-0.25 < x < 0\}$
34. $\frac{(x-1.5)^2}{1^2} + \frac{(y--3.3)^2}{0.2} = 1$
35. $\frac{(x+1.5)^2}{1^2} + \frac{(y--3.3)^2}{0.2} = 1$
36. $y = 2.5\{2 < x < 3\}$
37. $y = -0.5\{2 < x < 3\}$
38. $x = 2\{-0.5 < y < 2.5\}$
39. $x = 3\{-0.5 < y < 2.5\}$
40.



Arbeta tillsammans

Om jag säger: $(x-3)^2+(y-5)^2\leq 1$

Då säger jag: vänstra ögat

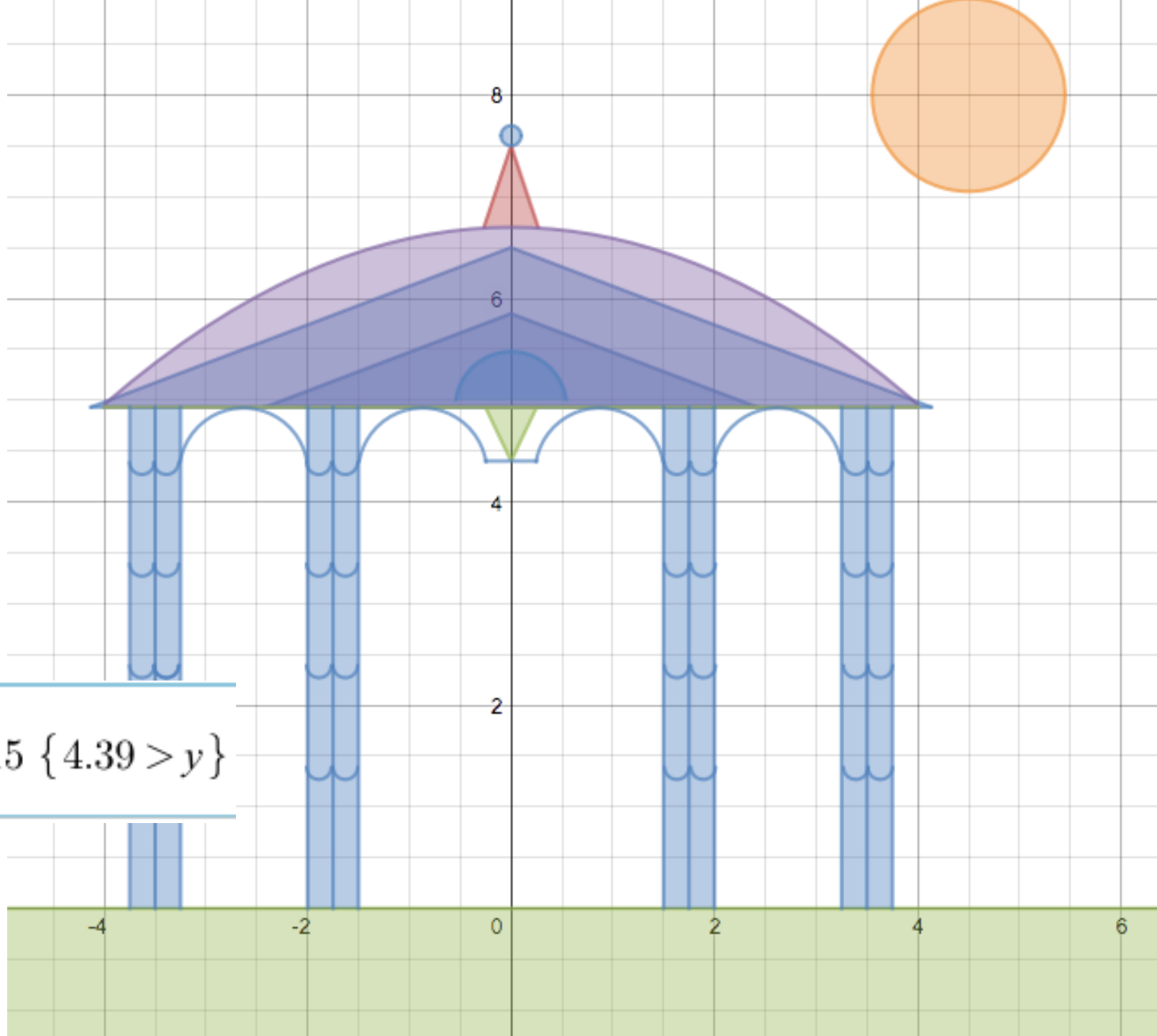


1. Hur gör du om du vill ha en blå himmel?

2. Vad händer om jag tar bort {4.39>y} från ekvationen?

22

$$(x+3.63)^2+(y-4.39)^2=0.015\ \{4.39>y\}$$



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Designed by teachers. Built with love by Desmos.

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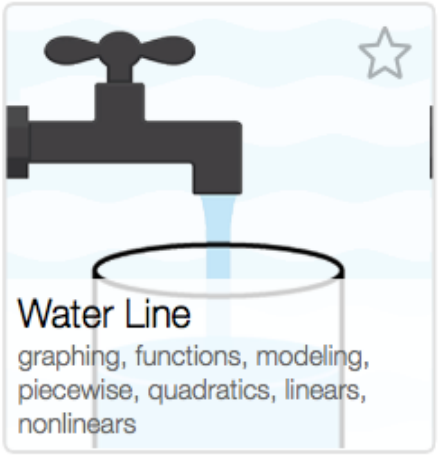
ACTIVITIES BY DESMOS



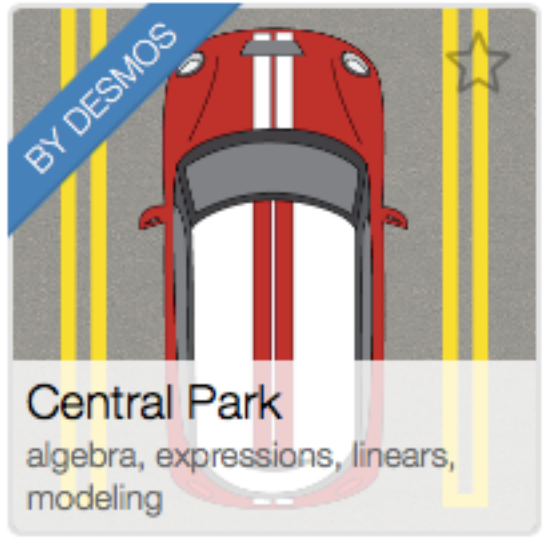
1 desmos.com/calculator

2 teacher.desmos.com

student.desmos.com

Function Carnival

graphing, functions, linears, quadratics, modeling

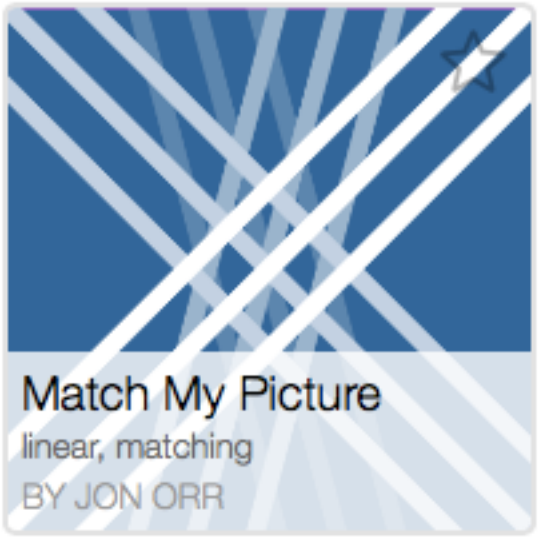


Central Park

algebra, expressions, linears, modeling

Water Line

graphing, functions, modeling, piecewise, quadratics, linears, nonlinears



Match My Picture

linear, matching

BY JON ORR

Polygraph: Lines

vocabulary, graphing, linears, functions, partners

Marbleslides: Lines

graphing, functions, linears, transformations, slope

CLASS CODE:

xfpm

Students enter this code on

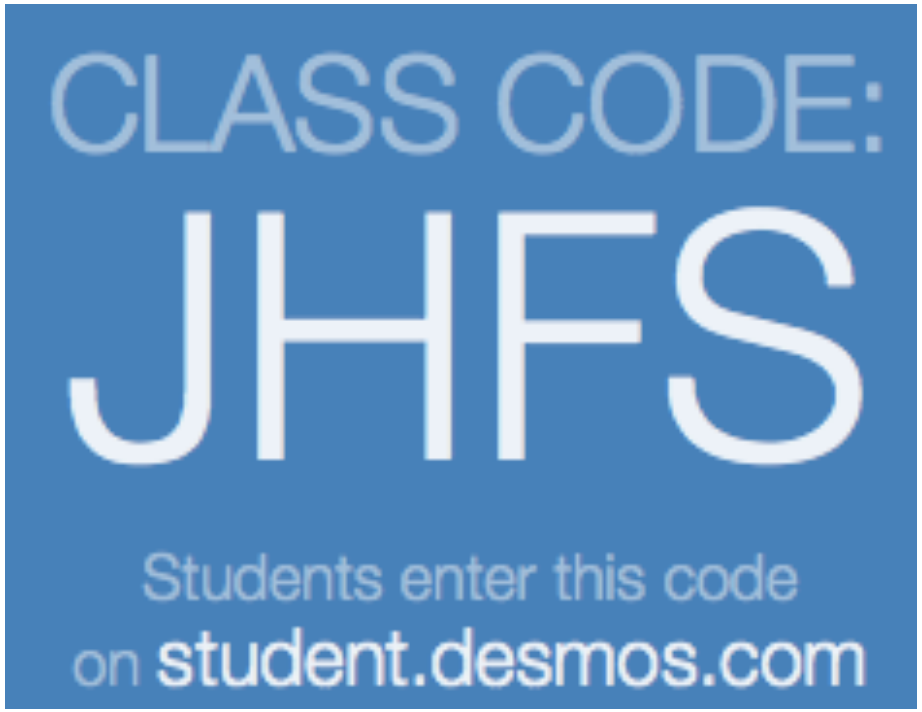
student.desmos.com

Student Instructions

1) Go to: **student.desmos.com**

2) Type in your class code: **ef5q**


Match My Picture
linear, matching
BY JON ORR


CLASS CODE:
JHFS
Students enter this code
on student.desmos.com

Polygraph

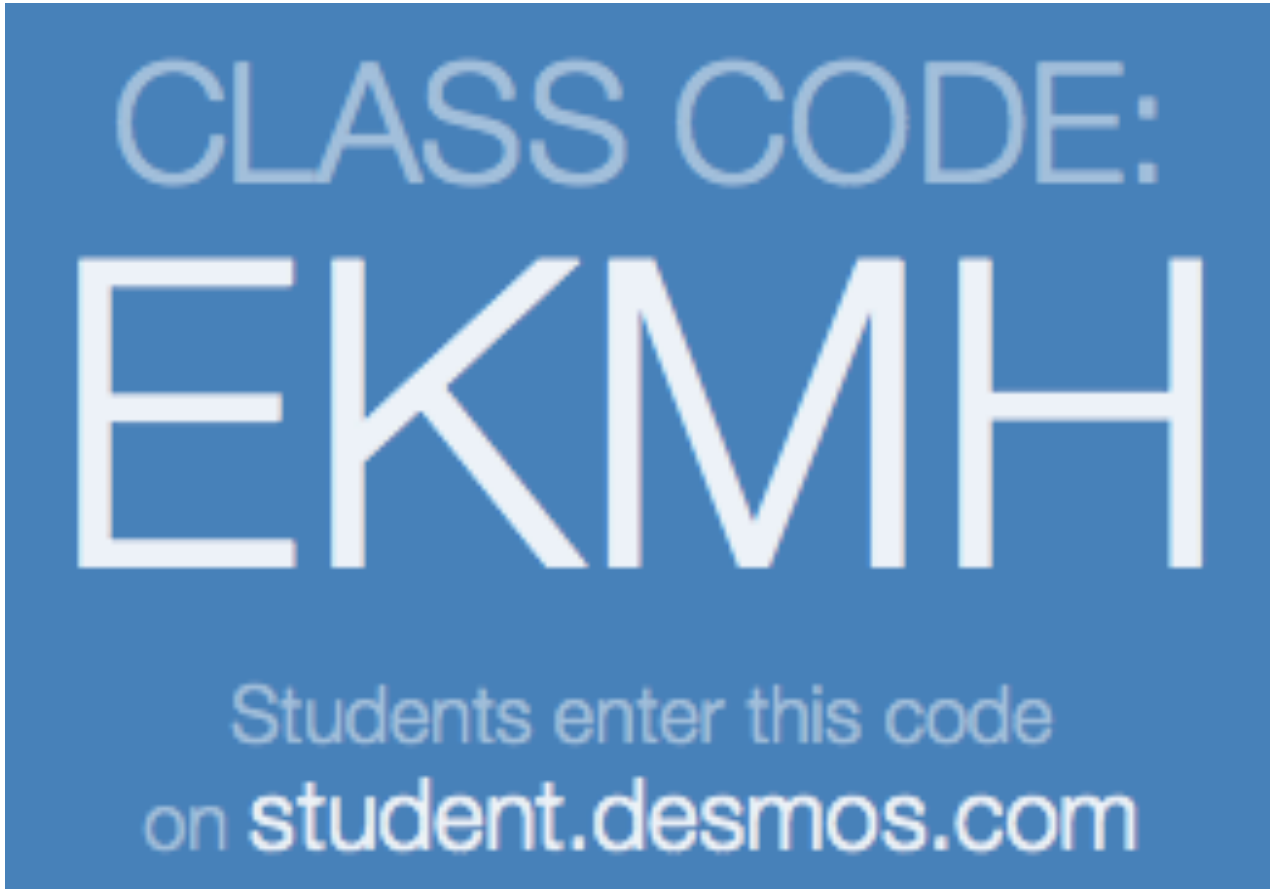
How the activity works:

1. Each student plays a practice round against the computer to learn how the game works.

2. Next, students are paired with a classmate to play polygraph with graphs (or polygons—it's teacher choice!) One person chooses a line; their partner asks yes/no questions in order to narrow a field of suspects down to one.

3. Between rounds, students answer questions that focus their attention on vocabulary and strategy.

Polygraph


CLASS CODE:
EKMH
Students enter this code
on student.desmos.com

Polygraph Rocks

by Jo Morgan @mathsjem

I was really impressed by how quickly their mathematical language developed. They started using the new words (roots, vertex and quadrant) fluently.

CLASS CODE DPCM

Hur gör man?

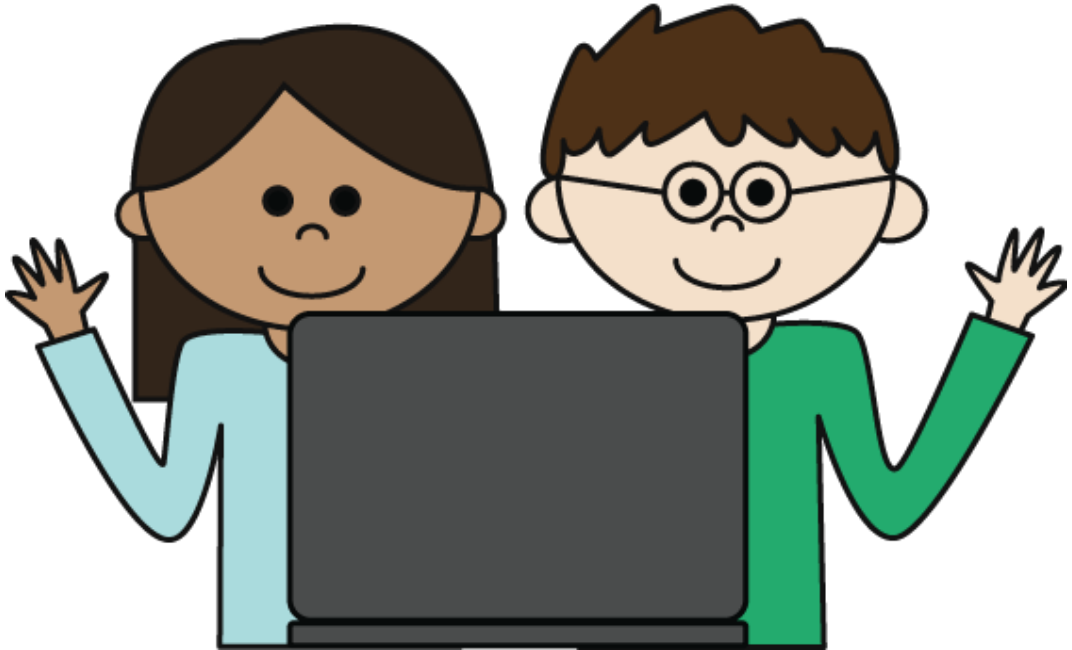
Gå till teacher.desmos.com

Skaffa en inloggning och logga in

Välj en aktivitet

Start new

Ge koden till dina elever



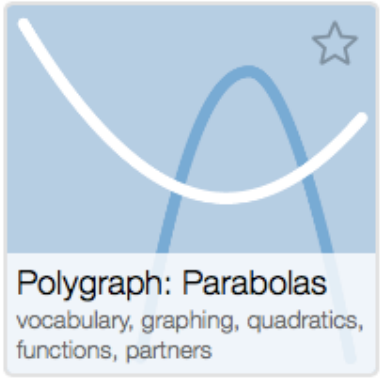
Activity Builder

ACTIVITIES BY DESMOS

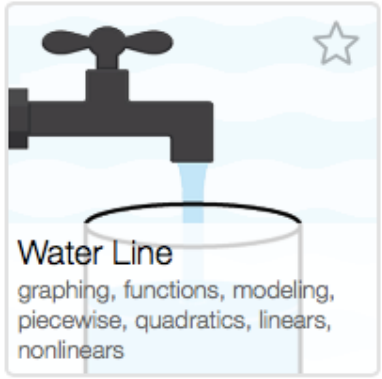
Marbleslides: Lines
graphing, functions, linears, transformations, slope

Marbleslides: Peri ics
graphing, functions, trigonometry, sin ds, transformation

Marbleslides: Parabolas
graphing, functions, quadratics, transformations



Polygraph: Parabolas
vocabulary, graphing, quadratics, functions, partners

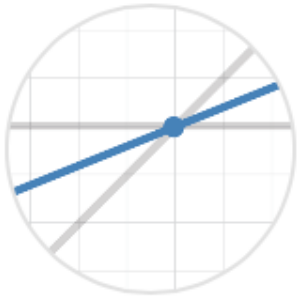


Water Line
graphing, functions, modeling, piecewise, quadratics, linears, nonlinears

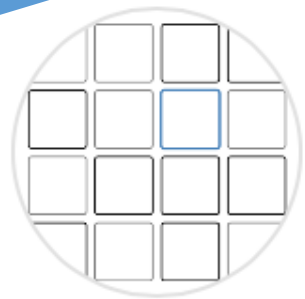
Marbleslides: Exponentials
graphing, functions, exponentials, transformations, asymptotes

Function Ca
graphing, functi quadratics, mo

YOUR CUSTOM ACTIVITIES

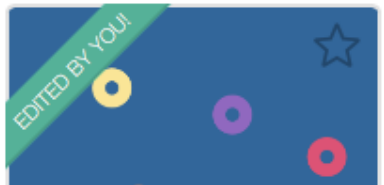


CREATE WITH
Activity Builder



CREATE WITH
Custom Polygraph

Fractions on a Number Line
fraction, rational number, number line, partition
BY NATHAN KRAFT



Sugar Sugar
unit rate, proportional reasoning, slope, cereal
BY JON ORR

Preconference Potluck
BY ERIC BERGER

YOUR STARRED ACTIVITIES

desmos

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Activity Builder

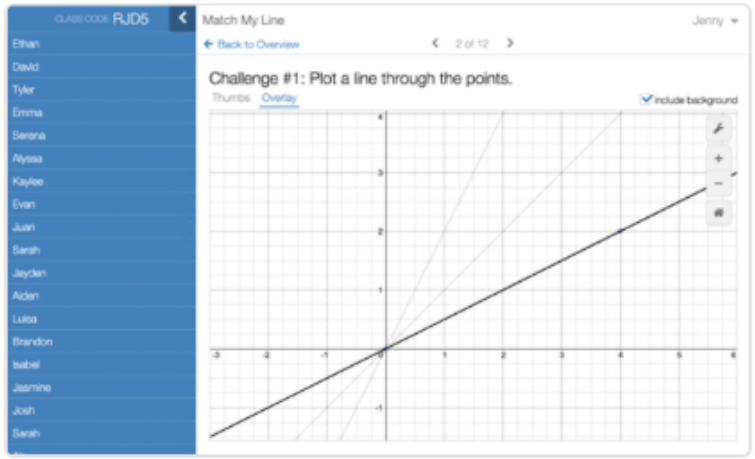
A DIY tool for creating Desmos-based activities

Start Building an Activity

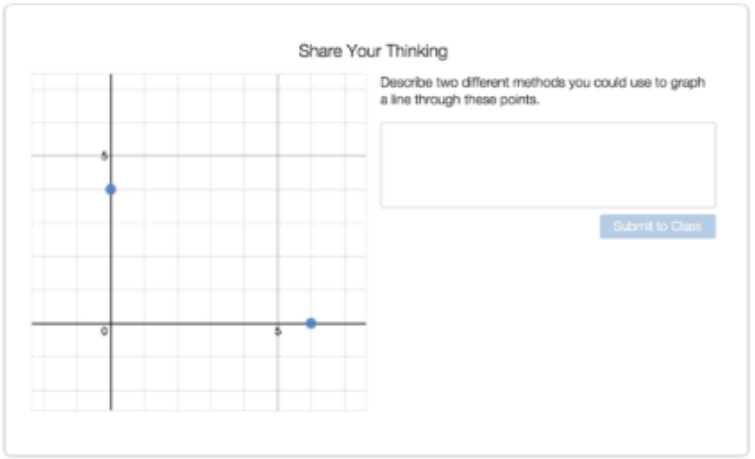
WHAT THIS IS

Activity Builder gives you the tools to build an online, interactive Desmos-based classroom activity.

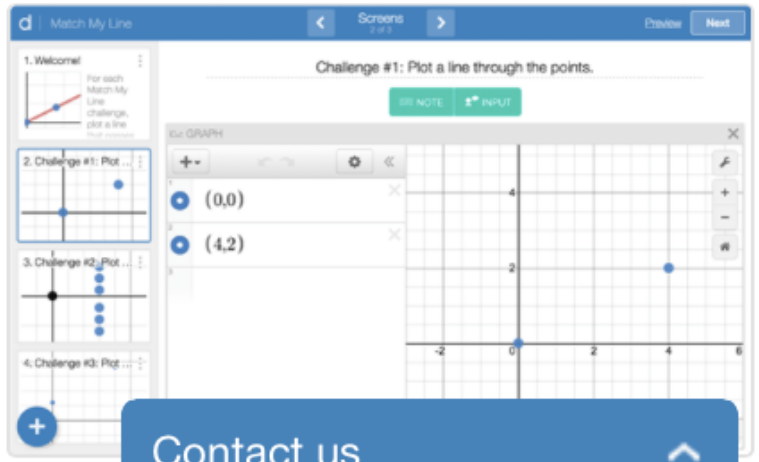
START SIMPLY



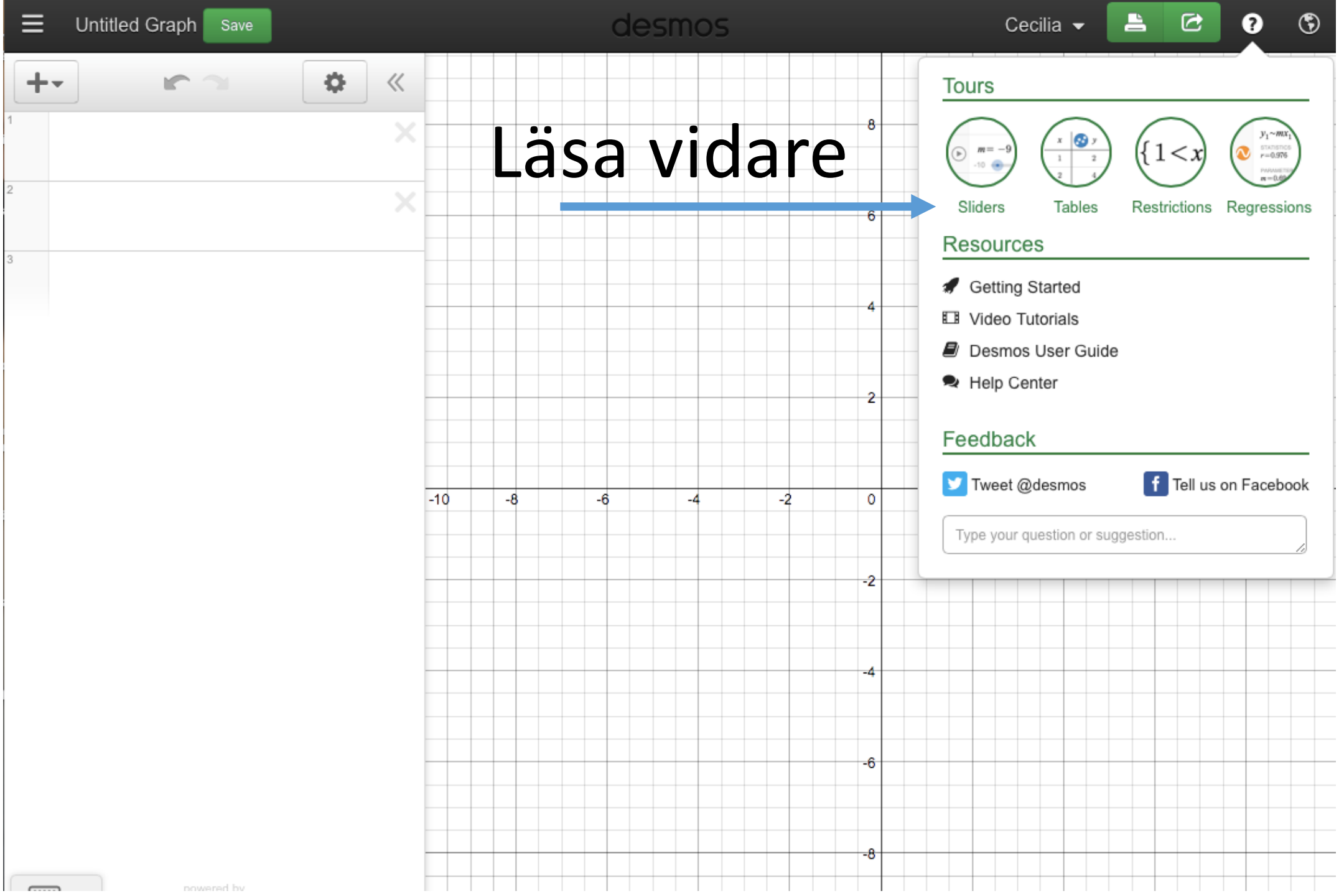
STEP IT UP



GO FOR IT!



Contact us


Untitled Graph
Save
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Läsa vidare
Tours
Sliders
Tables
Restrictions
Regressions
Resources
Getting Started
Video Tutorials
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Lycka till med Desmos, mycket glädje och mycket matte!

cecilia.christiansen@carlssonsskola.se

@CeMatematik