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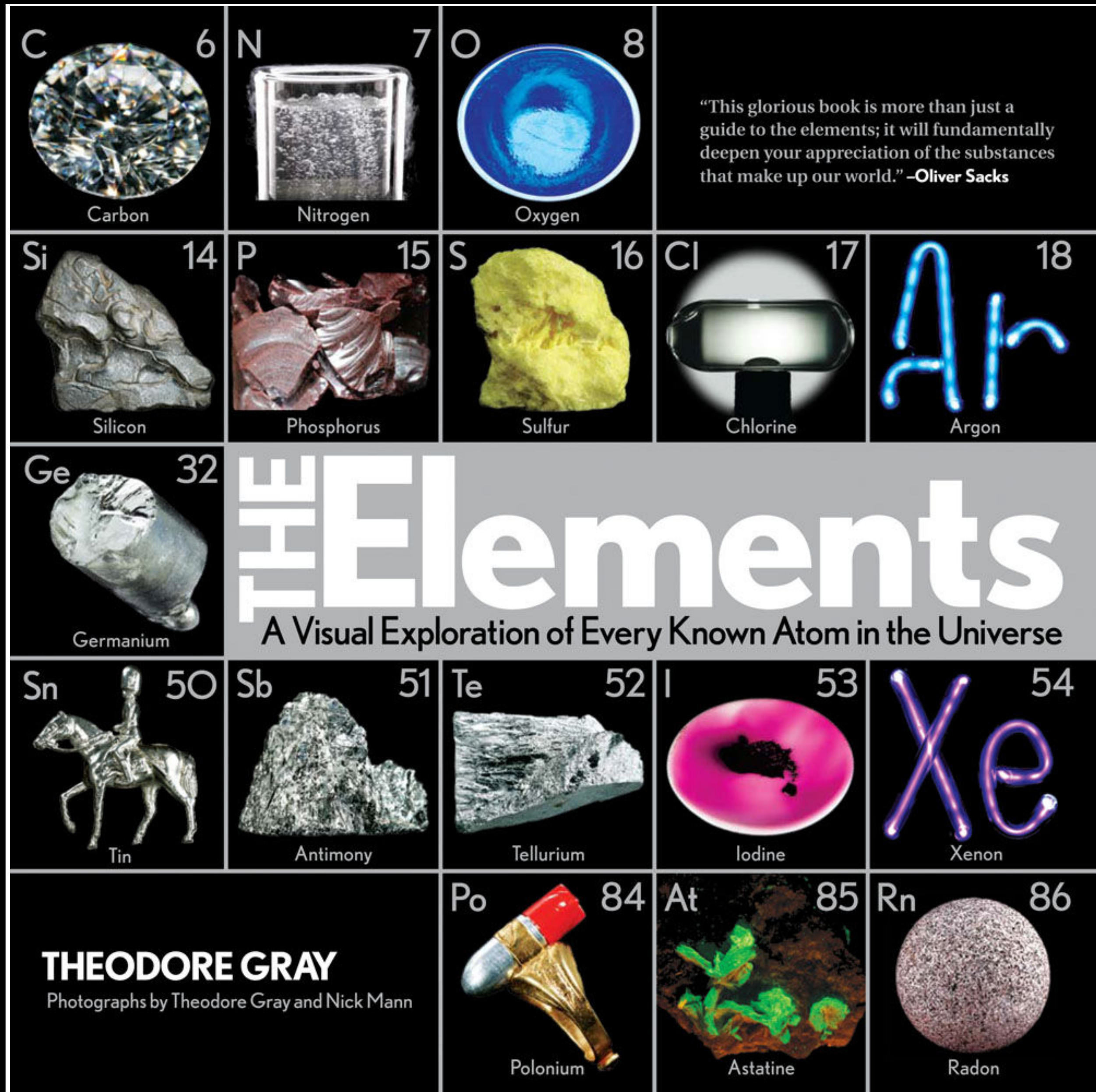

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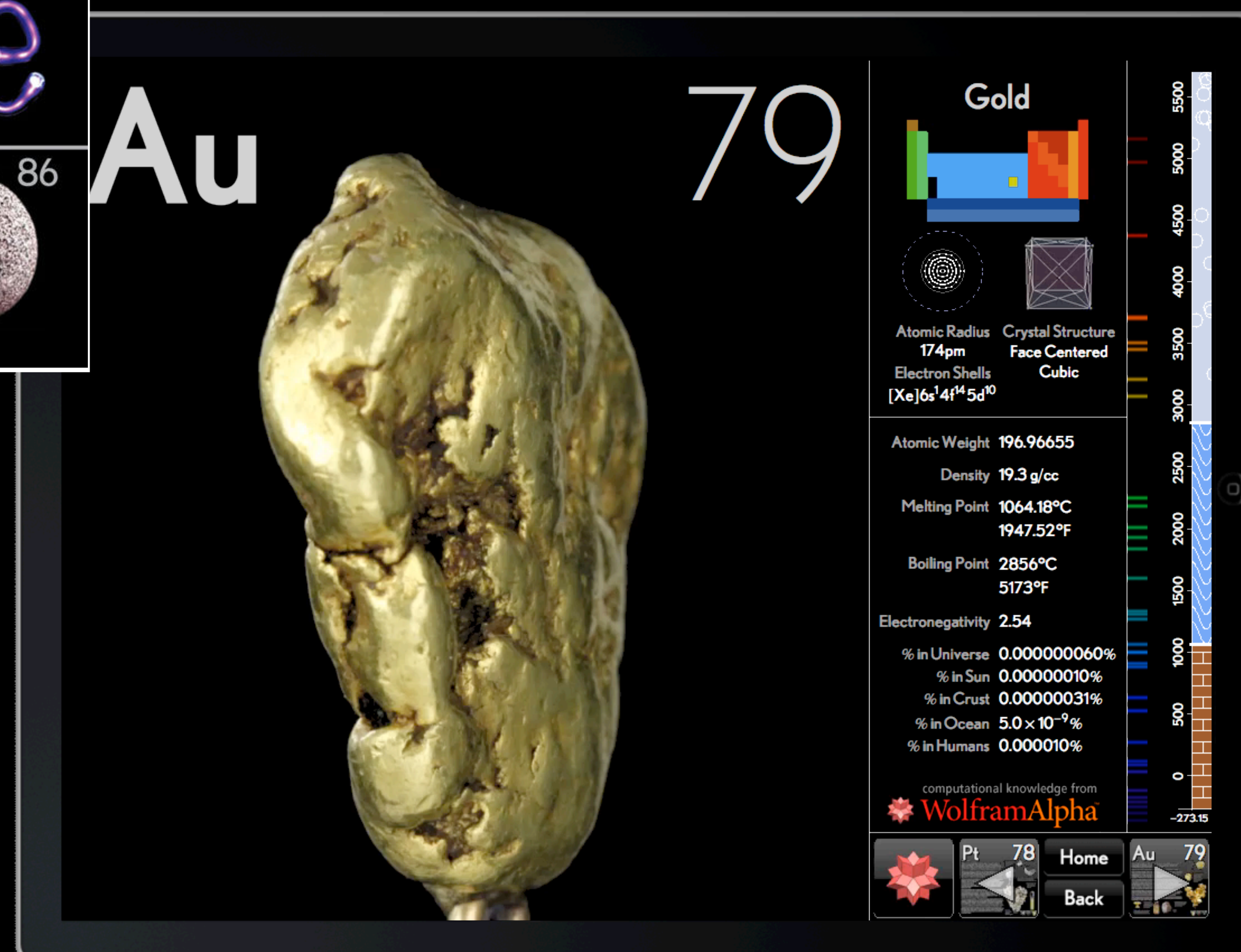

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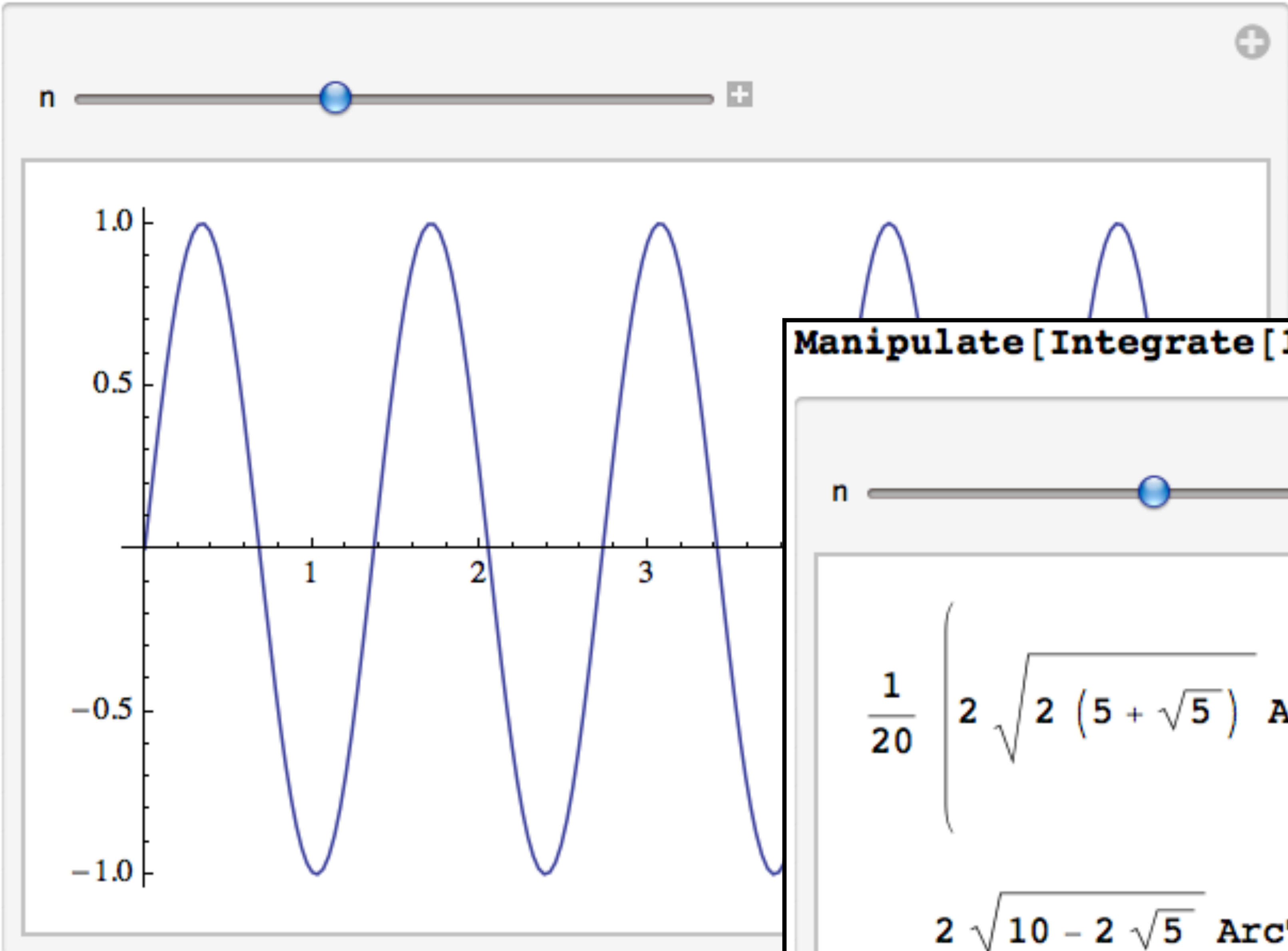
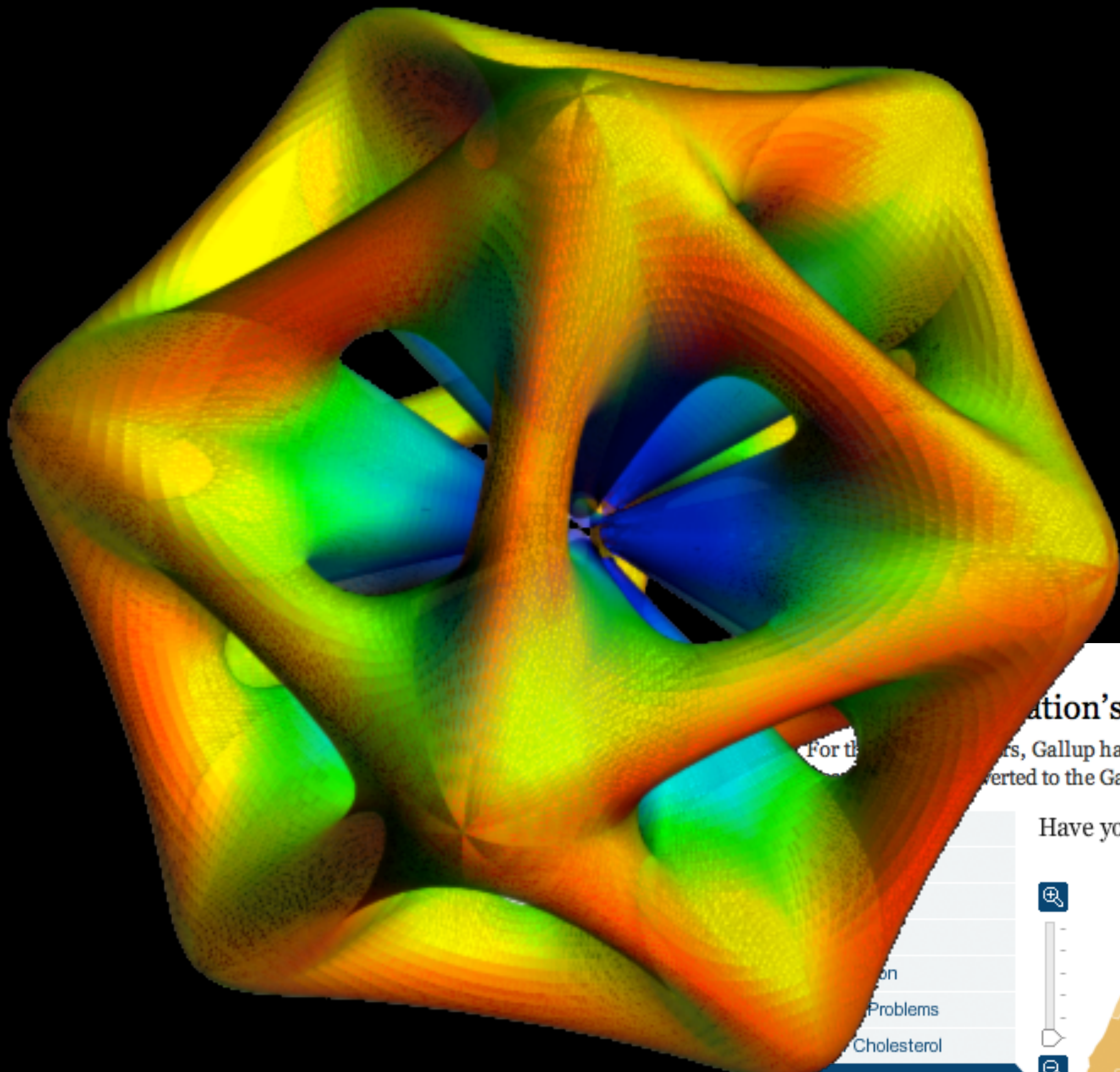
```
Manipulate[Plot[Sin[n x], {x, 0, 2 π}], {n, 1, 10}]
```

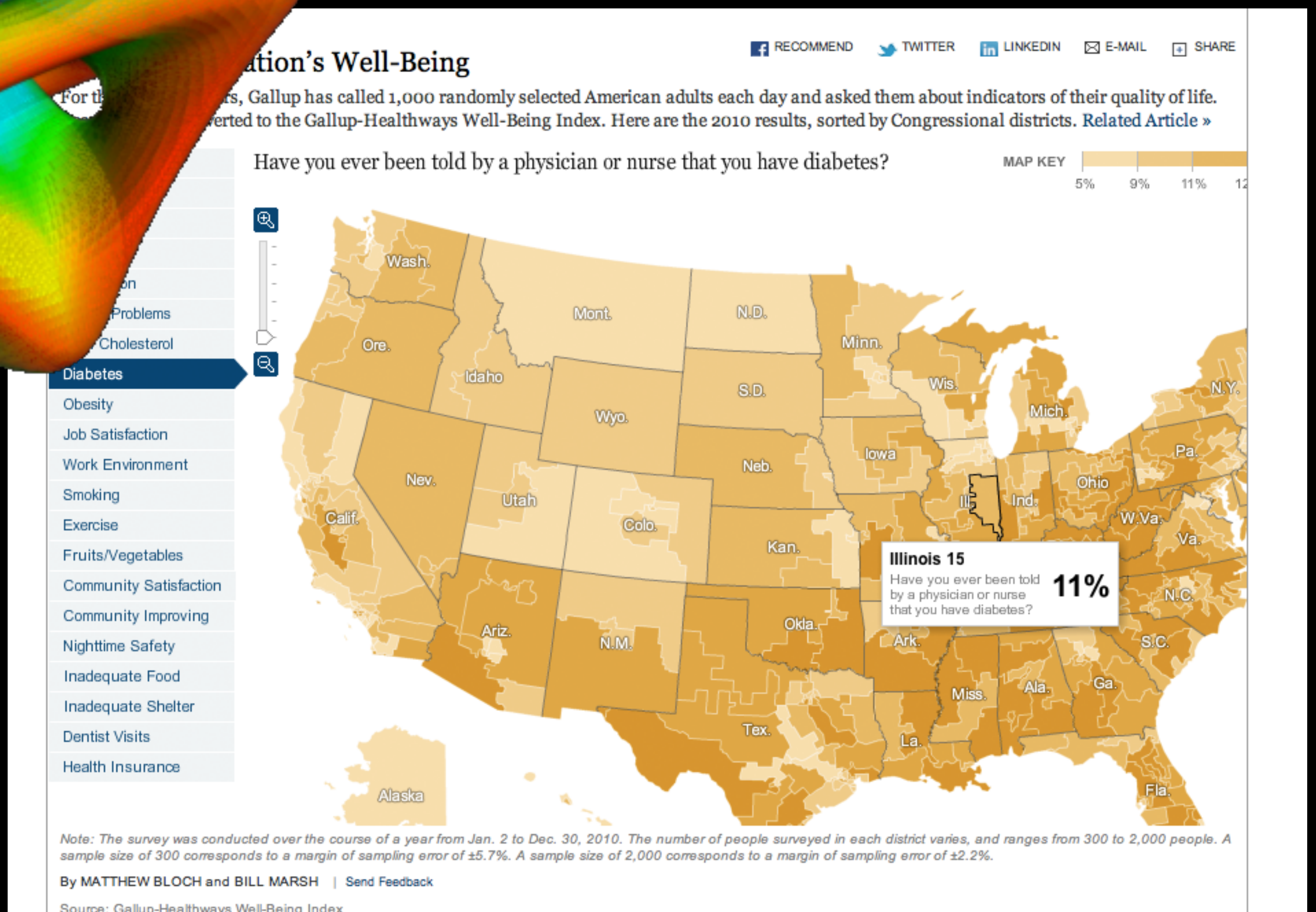



```
Manipulate[Integrate[1 / (1 - x^n), x], {n, 1, 10, 1}]
```

n

$$\frac{1}{20}\left(2\sqrt{2\left(5+\sqrt{5}\right)}\ \mathrm{ArcTan}\left[\frac{1-\sqrt{5}+4x}{\sqrt{2\left(5+\sqrt{5}\right)}}\right]+2\sqrt{10-2\sqrt{5}}\ \mathrm{ArcTan}\left[\frac{1+\sqrt{5}+4x}{\sqrt{10-2\sqrt{5}}}\right]-4\,\mathrm{Log}[1-x]-\left(-1+\sqrt{5}\right)\mathrm{Log}\left[1-\frac{1}{2}\left(-1+\sqrt{5}\right)x+x^2\right]+\left(1+\sqrt{5}\right)\mathrm{Log}\left[1+\frac{1}{2}\left(1+\sqrt{5}\right)x+x^2\right]\right)$$

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For t rs, Gallup has called 1,000 randomly selected American adults each day and asked them about indicators of their quality of life.
verted to the Gallup-Healthways Well-Being Index. Here are the 2010 results, sorted by Congressional districts. Related Article »
Have you ever been told by a physician or nurse that you have diabetes?
MAP KEY
5%
9%
11%
Problems
Cholesterol
Diabetes
Obesity
Job Satisfaction
Work Environment
Smoking
Exercise
Fruits/Vegetables
Community Satisfaction
Community Improving
Nighttime Safety
Inadequate Food
Inadequate Shelter
Dentist Visits
Health Insurance
Wash.
Mont.
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Minn.
Ore.
Idaho
S.D.
Wis.
N.Y.
Mich.
Wyo.
Iowa
Pa.
Neb.
Nev.
Ohio
Utah
Ind.
Calif.
Colo.
W.Va.
Va.
Kan.
Illinois 15
Have you ever been told by a physician or nurse that you have diabetes?
11%
N.C.
Okla.
Ariz.
Ark.
N.M.
S.C.
Miss.
Ala.
Ga.
Tex.
La.
Alaska
Fla.
Note: The survey was conducted over the course of a year from Jan. 2 to Dec. 30, 2010. The number of people surveyed in each district varies, and ranges from 300 to 2,000 people. A sample size of 300 corresponds to a margin of sampling error of ±5.7%. A sample size of 2,000 corresponds to a margin of sampling error of ±2.2%.
By MATTHEW BLOCH and BILL MARSH | Send Feedback
Source: Gallup-Healthways Well-Being Index

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Mathematica News

Mathematica for students through CITES is now available. It can be obtained here. The cost is $25 without media (45 MB download) or $30 with the CD. It expires on 9/1/11 at which time it needs to be renewed. It will be renewed most likely at $25 again and will last until the following August or September.

Comments from Students

I am currently a 2nd year Ph.D. student at the University of Minnesota in Geology and want to report the advantages that C&M DiffEq has given me. It turns out that describing the mathematics of deformation in rocks is simply the flow section of C&M Diffeq expanded to 3-D. If you can find the strain matrix of the rocks (matrix of the diffeq in C&M), you can get flow paths and watch how the rock deforms. Another one of my advisor's students had been working on this before I came and has developed the theory behind relating these flow paths to rock deformation. It was considered quite neat that I had actually learned how to do this as an undergrad in C&M. I am using the C&M DiffEq lessons to teach new geology grad students the mathematics behind our work.

— A graduate student in Geology on DiffEq & Mathematica

Tech Support

Techs support both the lab machines and the software used in this program.
In the event of a problem, send an e-mail to tech@cm.math.uiuc.edu.

29 Copper

Copper is wonderful stuff. Just wonderful. Many other elements have some kind of a gotcha about them: maybe they are great in every way except they're poisonous, or they would be perfect except they explode when they touch water. Copper has no gotcha—it's just nice stuff all around.

Copper can be toxic, but it takes special effort—eating large amounts of copper sulfate, or routinely eating acidic foods that have been stored in copper containers for a long time. Extended contact with copper objects rarely causes harm. In fact, copper has antimicrobial properties that make it useful in hospitals for doorknobs and other surfaces on which infections may be passed (though claims of the mystical healing powers of copper bracelets are, of course, nonsense).

Copper is soft enough to be worked using hand tools or modest power tools, yet hard enough to be made into very useful things, especially when alloyed with tin (50) or zinc (30) to create, respectively, bronze or brass. You can even find copper in native metallic form in several places around the world, making it one of the first useful metals (hence "the Bronze Age," which I guess sounds better than "the Copper Alloy Age").

Copper is the only reasonably priced metal that isn't gray, quite a remarkable fact if you think about it. Every single one of the hundred-odd metallic elements is some shade of gray, except gold (79) and copper. Not surprisingly, copper has been used in jewelry since antiquity, where its only real disadvantage is that it tarnishes slowly, while gold remains bright forever (at six thousand times the price).

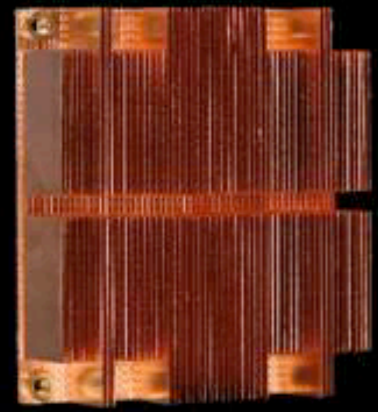
Unbeknownst to the ancients, copper has another nice attribute: the second-highest electrical conductivity of any metal. Vast quantities of copper are used for electrical wiring, making it as vital to the modern age as it was to the Bronze Age.

It may not be as pretty as copper, but I will always have a special place in my heart for the next element, zinc.

Half-Persian 4-in-1 weave chain made from copper electrical wire.

Brass, a copper alloy, has been used in jewelry from ancient times to the modern mall.

Copper electrowinning nodule.



Solid copper heat sink for a CPU chip.

Bronze is used in art and statuary the world over. This is a cheap Chinese trinket in heavy bronze.

Coppersmiths make cups and pitchers by hand from copper sheet.

Copper electrical cable thick enough to carry 400 amps.

Element

H He
Li Be B C N O F Ne
Na Mg Al Si P S Cl Ar
K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr
Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe
Cs Ba Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn
Fr Ra Rf Db Sg Bh Hs Mt Ds Rg Cn Uut Uuq Uup Uuh Uus Uuo
La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu
Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr

Isotope

^{217}U ^{218}U ^{219}U ^{220}U ^{221}U ^{222}U ^{223}U ^{224}U
^{225}U ^{226}U ^{227}U ^{228}U ^{229}U ^{230}U ^{231}U ^{232}U ^{233}U
^{234}U ^{235}U ^{236}U ^{237}U ^{238}U ^{239}U ^{240}U ^{241}U ^{242}U

Chain Direction

Show chains leading to given nuclide ☐
Show chains leading from given nuclide ☑
Trim unlikely branches ☐

Path Labels

Branch Percentages ☐
Decay Modes ☑
Decay Energies ☐
Line thickness for Branch Percentage ☑
Cumulative branch percentages ☑

Isotope Labels

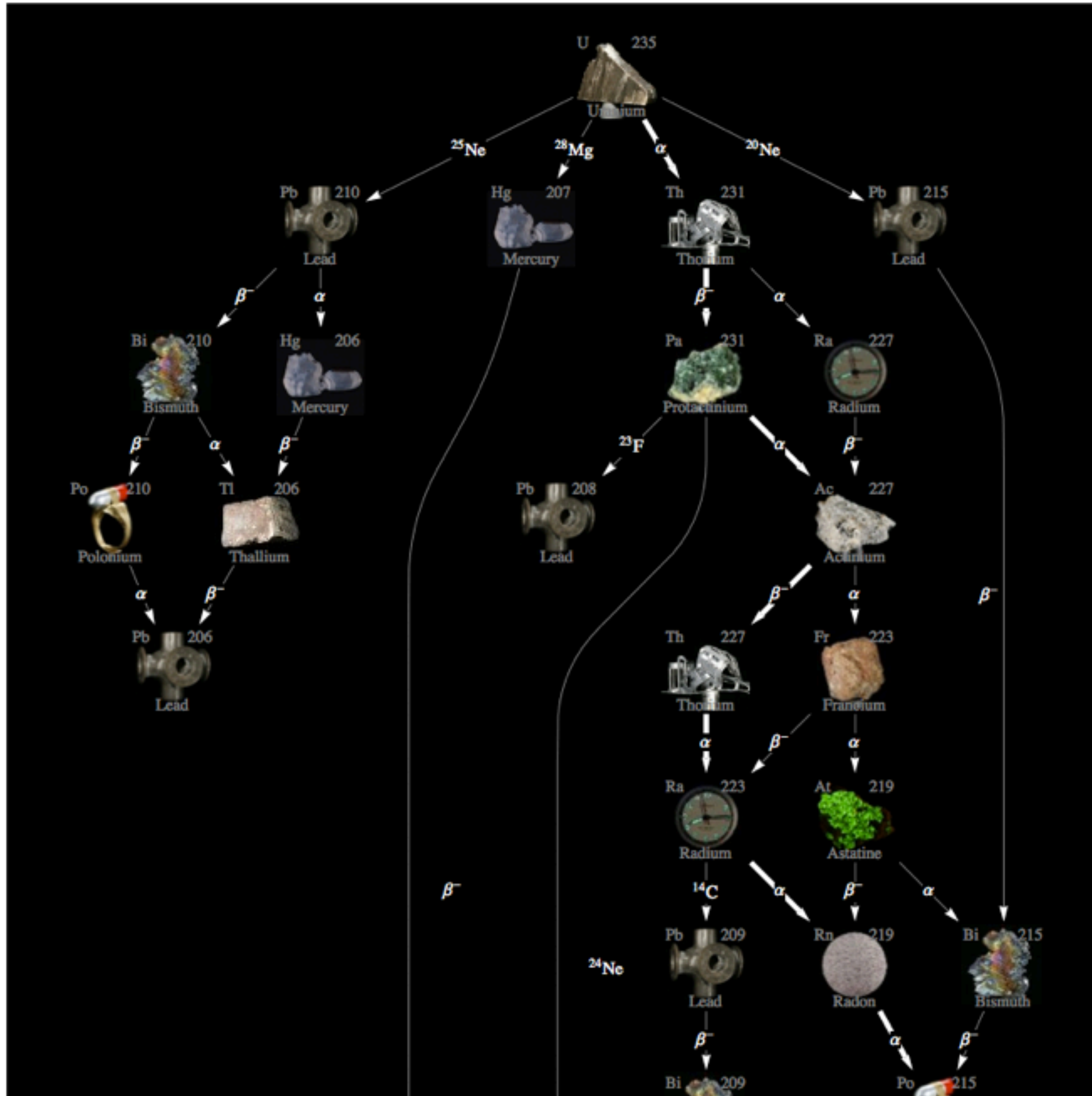
Names ☑
Pictures ☑

Click any nuclide to center on it.

^{235}U **Half-life** 7.04×10^{8} y

Ultimate Stable Decay Products

^{207}Pb 100.276%
^{205}Tl 10^{-7}%
^{206}Pb 10^{-9}%
^{208}Pb 10^{-12}%

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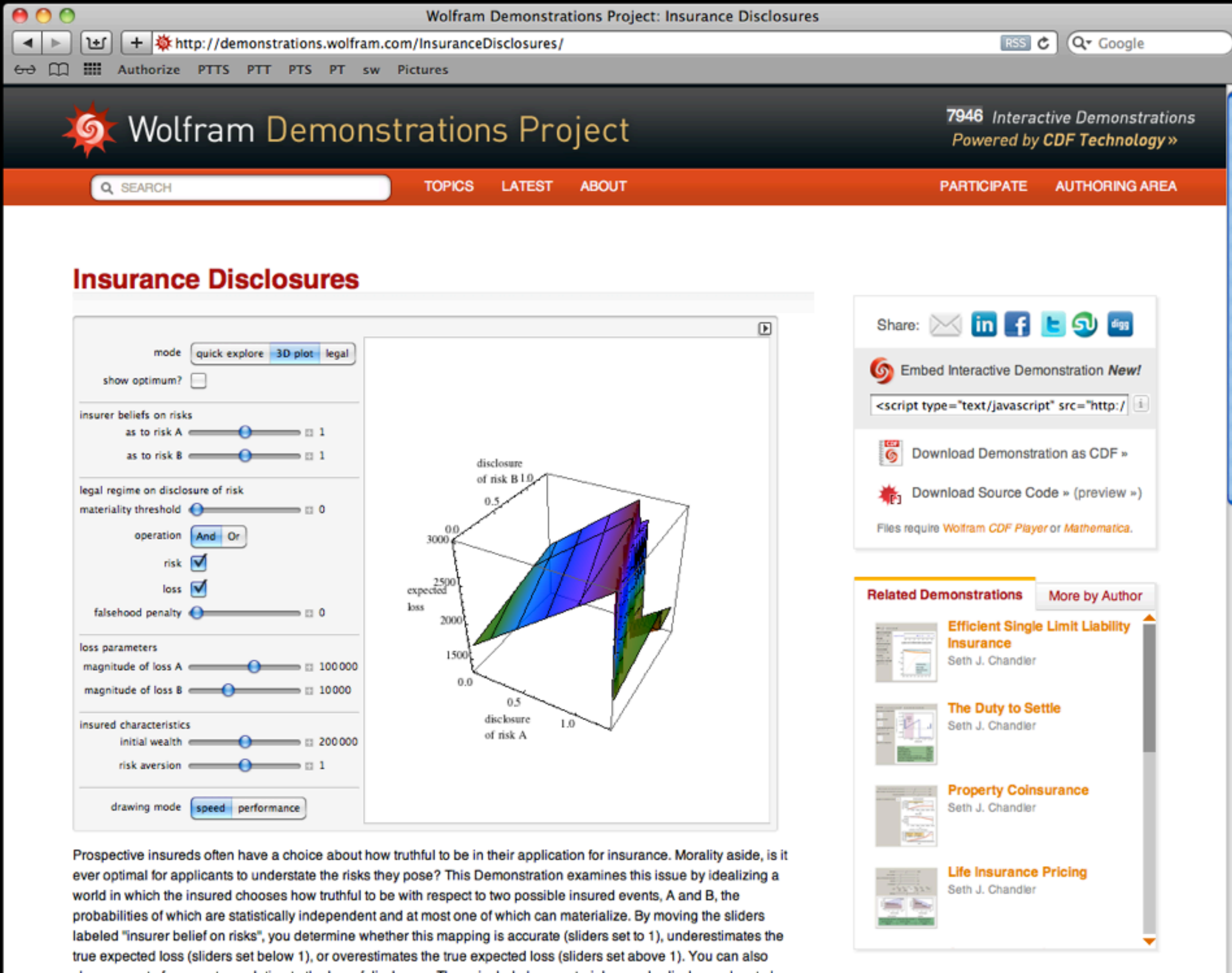
for iPad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insurer beliefs on risks
as to risk A
1
as to risk B
1
legal regime on disclosure of risk
materiality threshold
0
operation
And
Or
risk
loss
falsehood penalty
0
loss parameters
magnitude of loss A
100000
magnitude of loss B
10000
insured characteristics
initial wealth
200000
risk aversion
1
drawing mode
speed
performance
disclosure of risk B
1.0
0.5
0.0
3000
2500
expected loss
2000
1500
0.0
0.5
1.0
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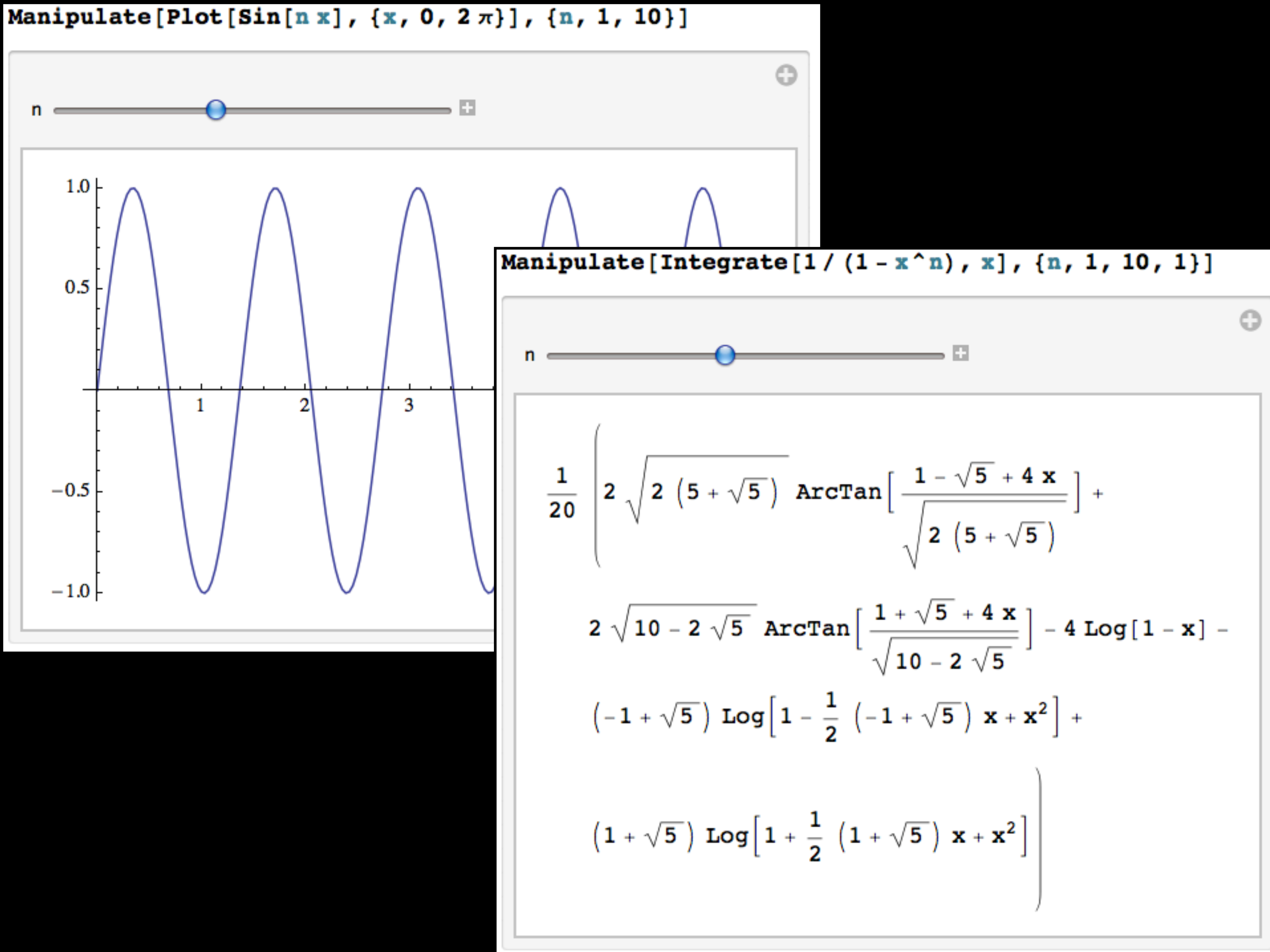
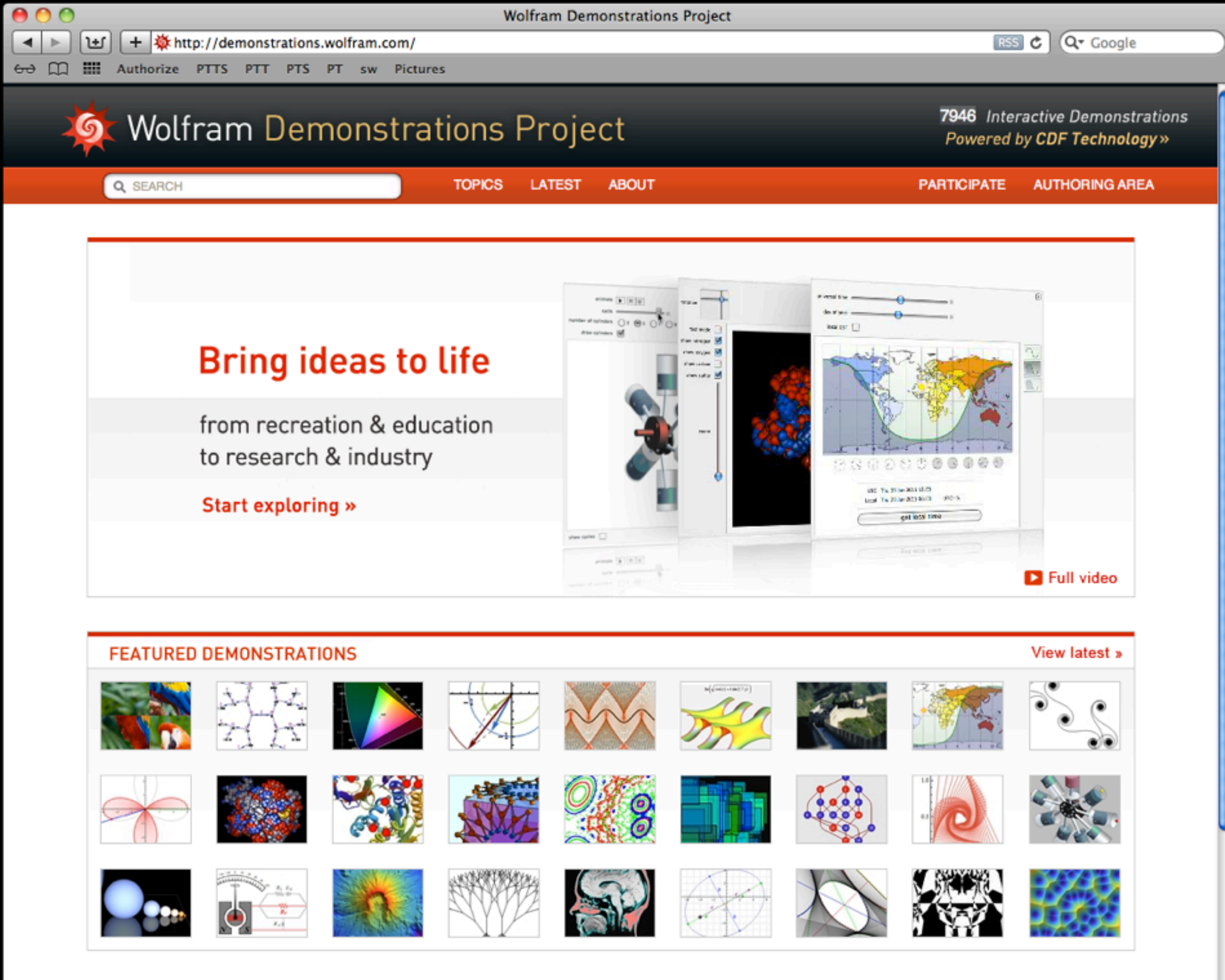
Seth J. Chandler
Prospective insureds often have a choice about how truthful to be in their application for insurance. Morality aside, is it ever optimal for applicants to understate the risks they pose? This Demonstration examines this issue by idealizing a world in which the insured chooses how truthful to be with respect to two possible insured events, A and B, the probabilities of which are statistically independent and at most one of which can materialize. By moving the sliders labeled "insurer belief on risks", you determine whether this mapping is accurate (sliders set to 1), underestimates the true expected loss (sliders set below 1), or overestimates the true expected loss (sliders set above 1). You can also



Manipulate[Plot[Sin[n x], {x, 0, 2 π}], {n, 1, 10}]
n
1.0
0.5
−0.5
−1.0
1
2
3
Manipulate[Integrate[1 / (1 - x^n), x], {n, 1, 10, 1}]
n
1/20 (2 Sqrt[2 (5 + Sqrt[5])] ArcTan[(1 - Sqrt[5] + 4 x)/Sqrt[2 (5 + Sqrt[5])]] +
2 Sqrt[10 - 2 Sqrt[5]] ArcTan[(1 + Sqrt[5] + 4 x)/Sqrt[10 - 2 Sqrt[5]]] - 4 Log[1 - x] -
(-1 + Sqrt[5]) Log[1 - 1/2 (-1 + Sqrt[5]) x + x^2] +
(1 + Sqrt[5]) Log[1 + 1/2 (1 + Sqrt[5]) x + x^2])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Chapter Preview Now that you are familiar with limits, the door to calculus stands open. The first task is to introduce the fundamental concept of the *derivative*. Suppose a function f represents a quantity of interest, say the variable cost of manufacturing an item, the population of a country, or the position of an orbiting satellite. The derivative of f is another function, denoted f', which gives the changing slope of the curve $y = f(x)$. Equivalently, the derivative of f gives the *instantaneous rate of change* of f at points in the domain. We use limits not only to define the derivative, but also to develop efficient rules for finding derivatives. The applications of the derivative—which we introduce along the way—are endless because almost everything around us is in a state of change, and derivatives describe change.

3.1 Introducing the Derivative

In this section we return to the problem of finding the slope of a line tangent to a curve, introduced at the beginning of Chapter 2. This concept is important for several reasons.

QUICK CHECK 2 In Example 1, is the slope of the tangent line at (2, 128) greater than or less than the slope at (1, 80)?

An alternative formula for the slope of the tangent line is helpful for future work. We now let $(a, f(a))$ and $(a + h, f(a + h))$ be the coordinates of P and Q, respectively (Figure 3.5). The difference in the x-coordinates of P and Q is $(a + h) - a = h$. Note that Q is located to the right of P if $h > 0$ and to the left of P if $h < 0$.

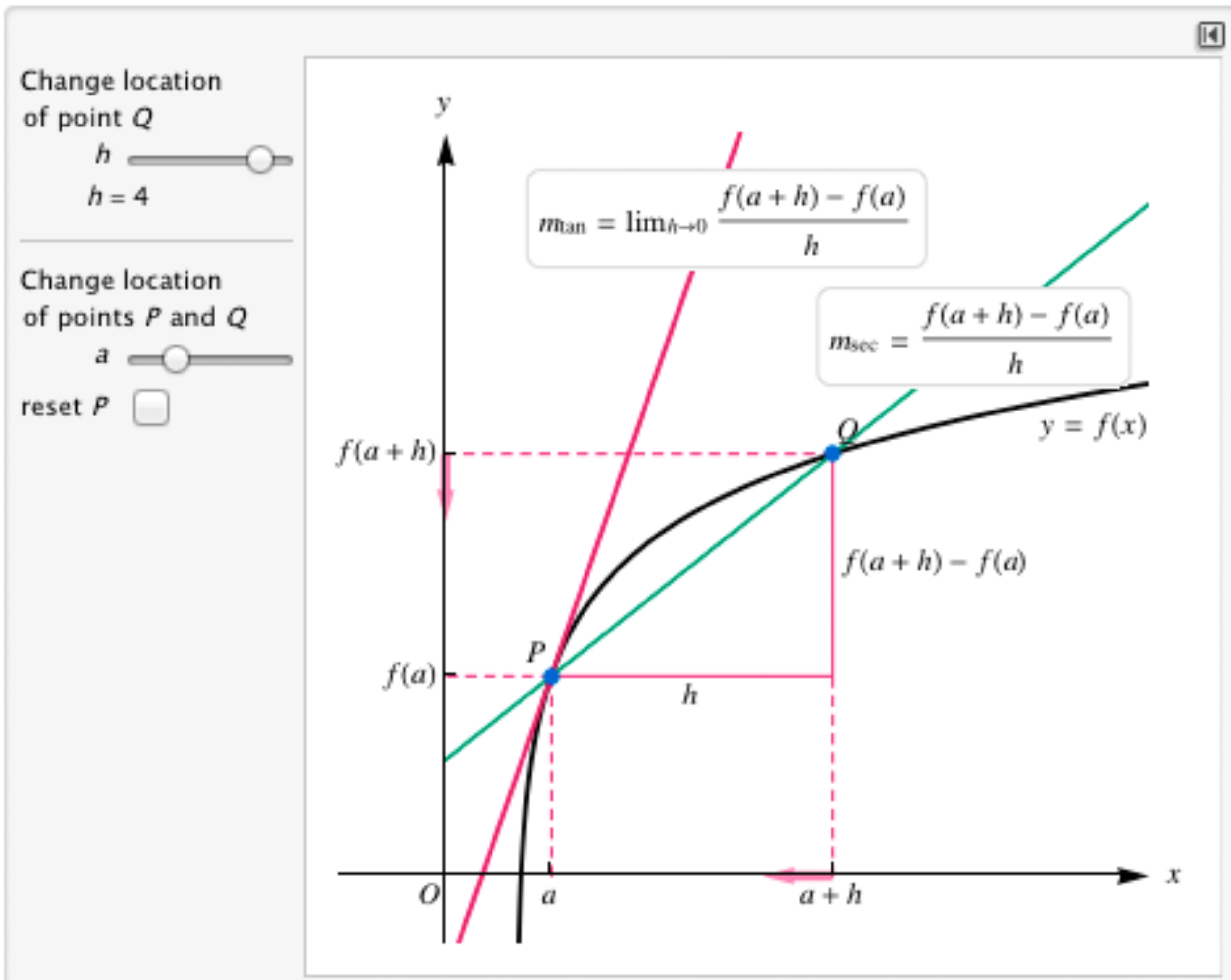
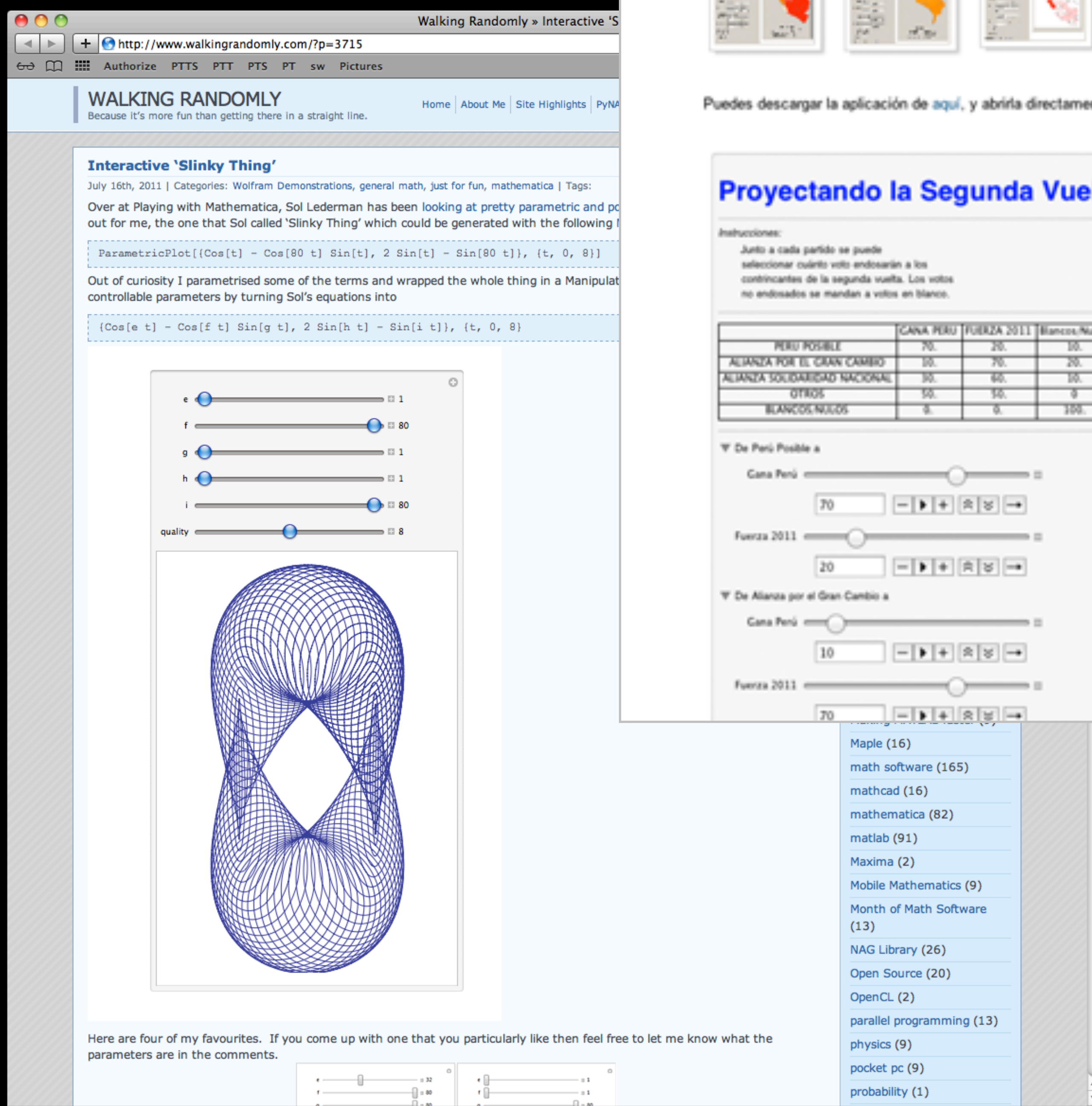


FIGURE 3.5

The slope of the secant line $\overleftrightarrow{PQ}$ using the new notation is $m_{\sec} = \frac{f(a+h) - f(a)}{h}$. As h approaches 0, the variable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Because it's more fun than getting there in a straight line.
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Interactive 'Slinky Thing'
July 16th, 2011 | Categories: Wolfram Demonstrations, general math, just for fun, mathematica | Tags:
Over at Playing with Mathematica, Sol Lederman has been looking at pretty parametric and pc
out for me, the one that Sol called 'Slinky Thing' which could be generated with the following l
ParametricPlot[{Cos[t] - Cos[80 t] Sin[t], 2 Sin[t] - Sin[80 t]}, {t, 0, 8}]
Out of curiosity I parametrised some of the terms and wrapped the whole thing in a Manipulat
controllable parameters by turning Sol's equations into
{Cos[e t] - Cos[f t] Sin[g t], 2 Sin[h t] - Sin[i t]}, {t, 0, 8}
e 1
f 80
g 1
h 1
i 80
quality 8
Here are four of my favourites. If you come up with one that you particularly like then feel free to let me know what the
parameters are in the comments.
Maple (16)
math software (165)
mathcad (16)
mathematica (82)
matlab (91)
Maxima (2)
Mobile Mathematics (9)
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(13)
NAG Library (26)
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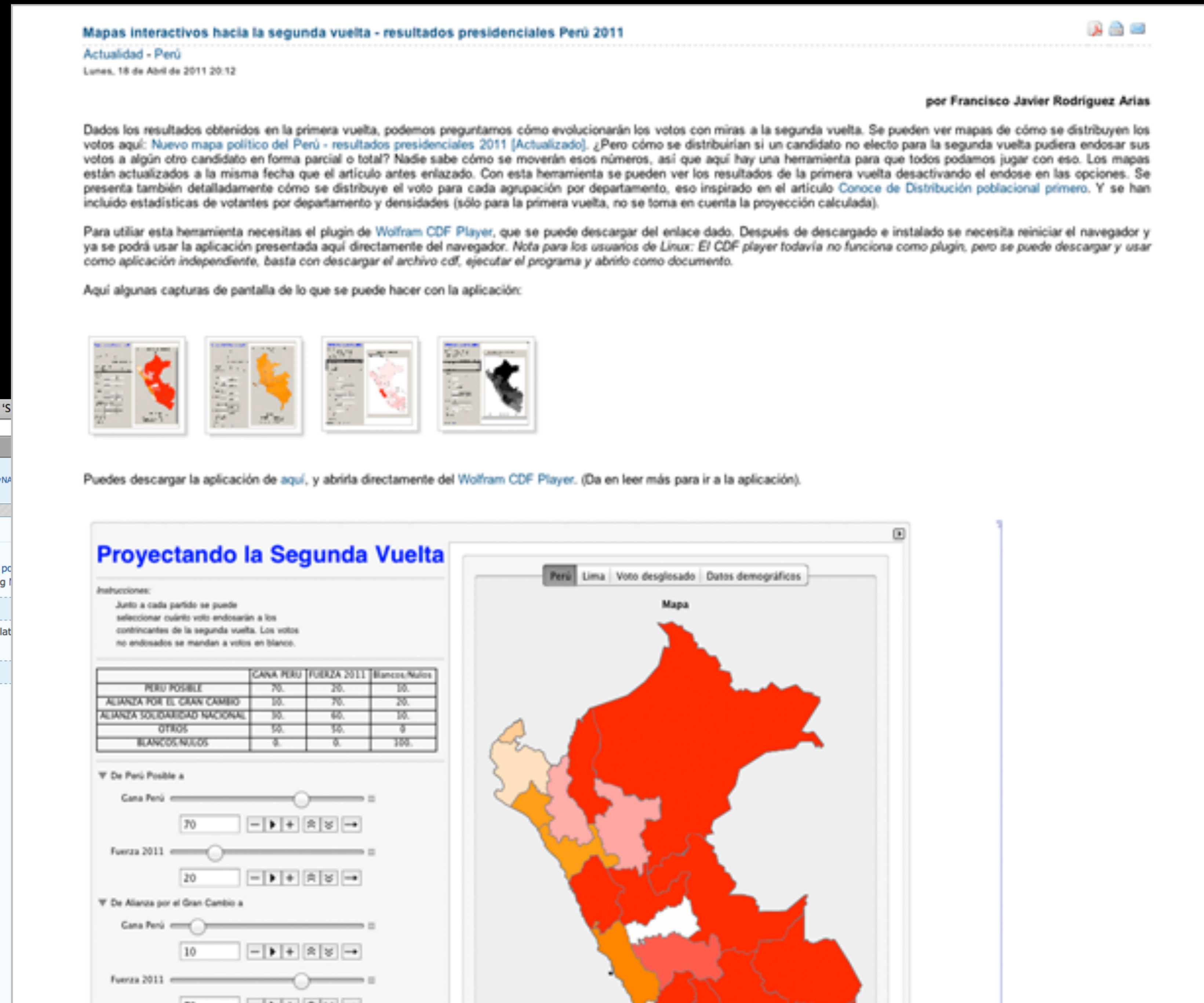
physics (9)
pocket pc (9)
probability (1)


Mapas interactivos hacia la segunda vuelta - resultados presidenciales Perú 2011
Actualidad - Perú
Lunes, 18 de Abril de 2011 20:12
por Francisco Javier Rodríguez Arias
Dados los resultados obtenidos en la primera vuelta, podemos preguntarnos cómo evolucionarán los votos con miras a la segunda vuelta. Se pueden ver mapas de cómo se distribuyen los votos aquí: Nuevo mapa político del Perú - resultados presidenciales 2011 [Actualizado]. ¿Pero cómo se distribuirían si un candidato no electo para la segunda vuelta pudiera endosar sus votos a algún otro candidato en forma parcial o total? Nadie sabe cómo se moverán esos números, así que aquí hay una herramienta para que todos podamos jugar con eso. Los mapas están actualizados a la misma fecha que el artículo antes enlazado. Con esta herramienta se pueden ver los resultados de la primera vuelta desactivando el endose en las opciones. Se presenta también detalladamente cómo se distribuye el voto para cada agrupación por departamento, eso inspirado en el artículo Conoce de Distribución poblacional primero. Y se han incluido estadísticas de votantes por departamento y densidades (sólo para la primera vuelta, no se toma en cuenta la proyección calculada).
Para utilizar esta herramienta necesitas el plugin de Wolfram CDF Player, que se puede descargar del enlace dado. Después de descargado e instalado se necesita reiniciar el navegador y ya se podrá usar la aplicación presentada aquí directamente del navegador. Nota para los usuarios de Linux: El CDF player todavía no funciona como plugin, pero se puede descargar y usar como aplicación independiente, basta con descargar el archivo cdf, ejecutar el programa y abrirlo como documento.
Aquí algunas capturas de pantalla de lo que se puede hacer con la aplicación:
Puedes descargar la aplicación de aquí, y abrirla directamente del Wolfram CDF Player. (Da en leer más para ir a la aplicación).
Proyectando la Segunda Vuelta
Instrucciones:
Junto a cada partido se puede seleccionar cuánto voto endosarán a los contrincantes de la segunda vuelta. Los votos no endosados se mandan a votos en blanco.
GANA PERU | FUERZA 2011 | Blancos/Nulos
PERU POSIBLE 70. 20. 10.
ALIANZA POR EL GRAN CAMBIO 10. 70. 20.
ALIANZA SOLIDARIDAD NACIONAL 30. 60. 10.
OTROS 50. 50. 0
BLANCOS NULOS 0. 0. 100.
De Perú Posible a
Gana Perú 70
Fuerza 2011 20
De Alianza por el Gran Cambio a
Gana Perú 10
Fuerza 2011 70
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6.6: Double Integrals and Volume

$$f(x, y) = 8 - x^2 + 2y - y^2$$

Δx, y: 0.1 | 0.25 | 0.5

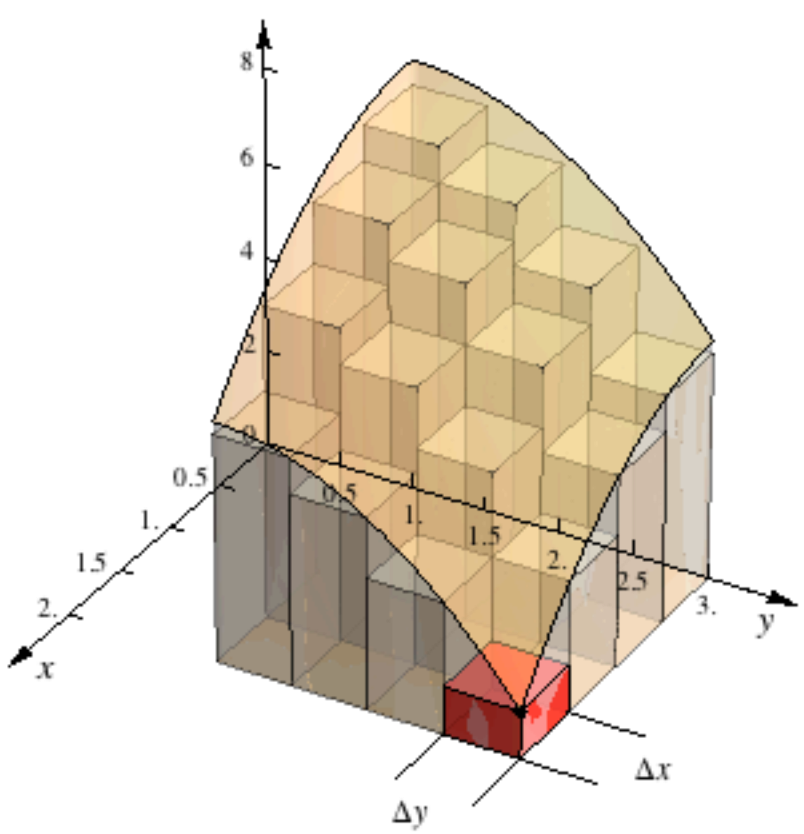
Single Column

Show/Hide

Surface

Columns

Viewpoint



CALCULUS

Geometry And The Imagination

Chapter 1. The Simplest Curves and Surfaces > 01. Plane Curves >

01. Straight Line

<- Previous Up Next ->

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The simplest surface is the plane. The simplest curves are the plane curves, and of these the simplest is the straight line. The straight line can be defined as the shortest path between two points, or as the intersection of two planes, or as an axis of rotation.

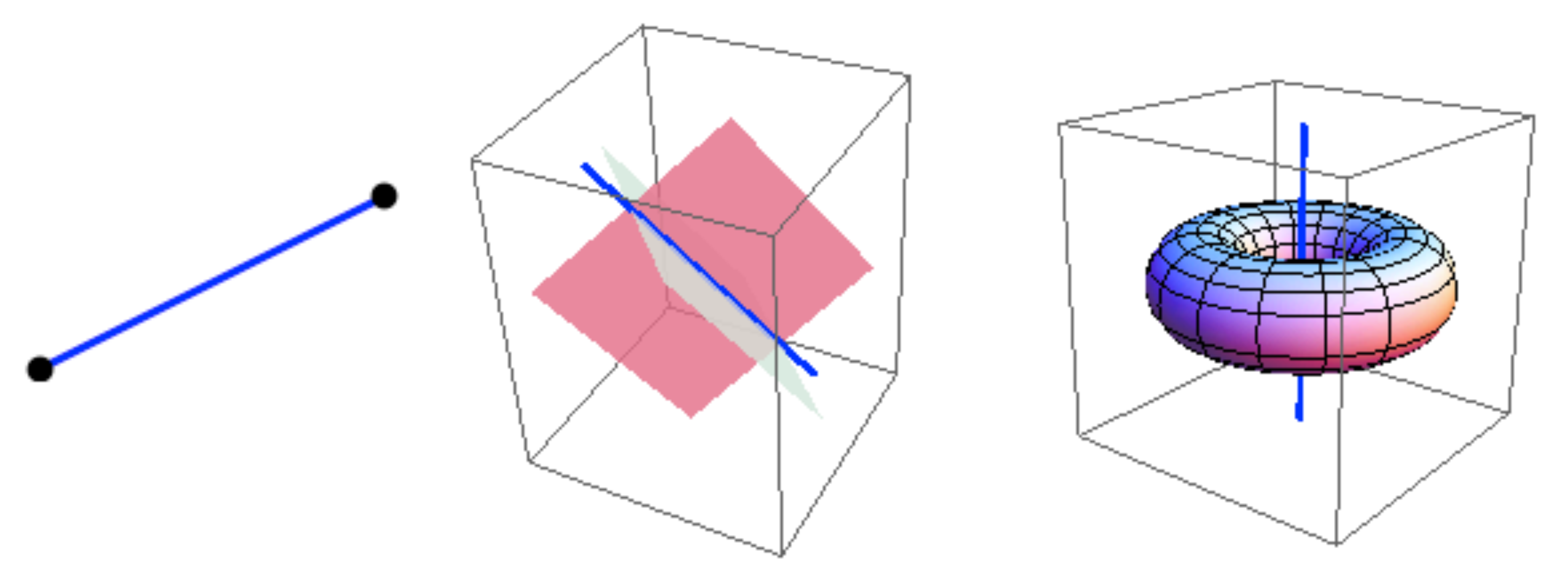

Figure 1. The straight line can be defined as the shortest path between two points, or as the intersection of two planes, or as an axis of rotation.

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The portal is currently in Beta, so feel free to explore the materials we've put together and provide feedback to help us improve the project.

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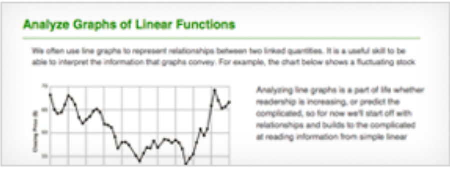
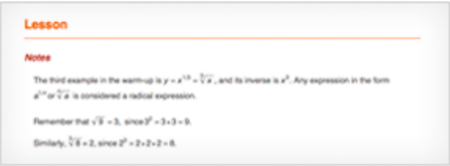
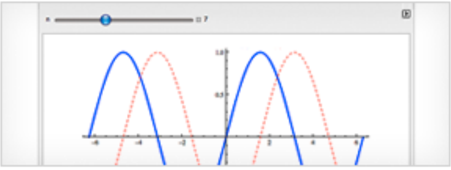
Expose your students to a whole new way of learning and understanding algebra through our dynamic teaching tools and materials. Built by our math education experts, you can trust that the materials cover the topics you need to teach.



Textbook



Lesson Plan



Demonstration

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