

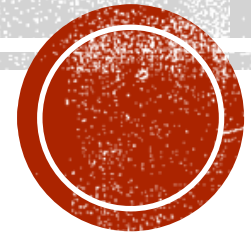
SCIENTIFIC
AMERICAN



The News&Observer

A PRECALCULUS / CALCULUS TEACHER READS THE NEWSPAPER

Forrest Hinton, NCSSM



WSJ

The Washington Post

The
Economist

The
New York
Times

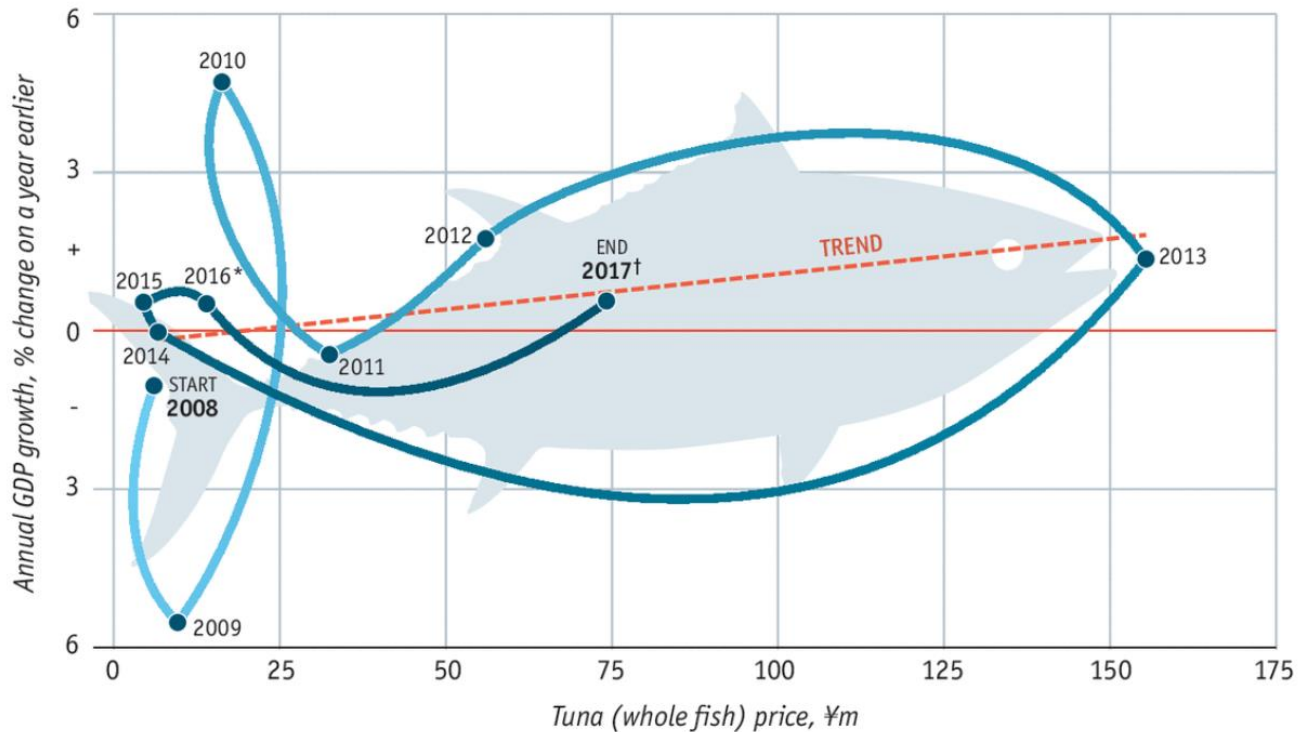
Daily chart

Can tuna prices predict Japan's GDP growth?

The relationship appears rather fishy

Economy of scales

Tsukiji market, first tuna prices v Japan GDP growth, 2008-17



Sources: IMF; press reports

*GDP estimate †GDP forecast



Heard this on NPR yesterday. Might want to pocket it for introduction to derivatives/2nd derivative for future.

<https://www.npr.org/2018/12/12/676198899/climate-scientist-says-argument-the-climate-is-always-changing-is-wrong>

Right before 1:20, you'll hear...

HERRING: So technically that's true. The climate has always been changing. But for various reasons, the current change that we're experiencing now is particularly alarming, and that is because in the history of human civilization, **the climate has never changed this rapidly**. And that's really what concerns scientists. **It's not the fact that there is change, but it's the speed of that change.**



WHY USE THE NEWS IN MATH CLASS?

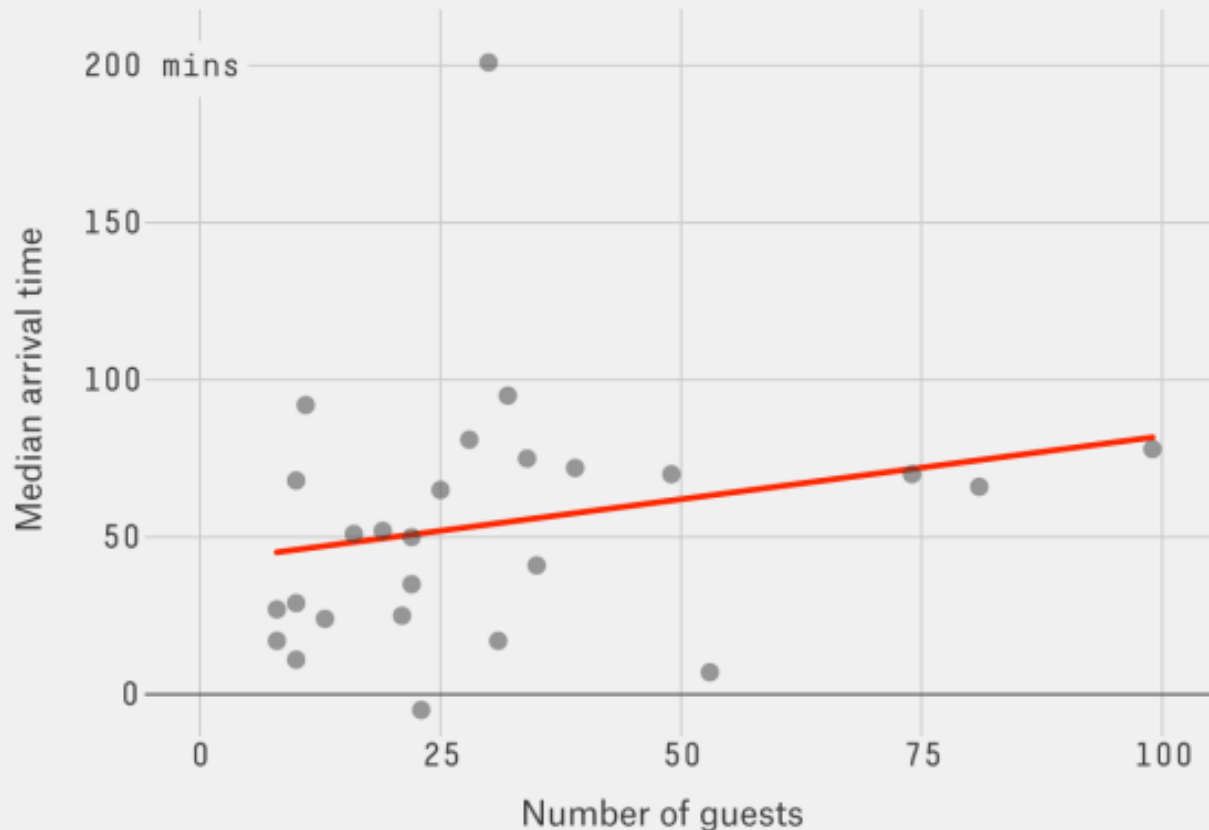
- Using mathematics to interpret and question the reporting of current events shows students that **learning math matters**
- Incorporating news stories and the data presented in the stories **gets students excited** about applying math concepts to real-world situations
- Solving problems related to current events shows students that **math is useful in other fields**, like, economics, politics, sociology, biology, anthropology, ecology, etc.
- Analyzing the news through a mathematical lens develops students into **more aware and more critical citizens**



NEWS ON A PRECALCULUS QUIZ OR WARM-UP

Now, The Party Don't Start Till I Walk In

Median arrival time in minutes after start, by number of guests



The linear regression equation for the line shown on the graph is:

Median arrival = 0.402 * Number of guests + 41.96

Describe the relationship between median arrival time and number of guests. Use as specific and precise vocabulary as you can, and include at least three characteristics of the data from the scatter plot.

Interpret both the slope and y-intercept of this regression line in context of the problem. Use units when appropriate.



NEWS IN A MODELING ACTIVITY

SECTIONS

HOME

SEARCH

The New York Times

ally's Lesson

10.  [Math Problem Bedevils Republican Tax Rewrite](#)

11.  [These Are the Ads Russia Bought on Facebook in 2016](#)

12.  [The Lost Children of Tuam](#)

TRENDING

POLITICS

Math Problem Bedevils Republican Tax Rewrite

By JIM TANKERSLEY, THOMAS KAPLAN and ALAN RAPPEPORT NOV. 1, 2017



Speaker Paul D. Ryan outlined the tax plan in a meeting on Tuesday with conservative groups.



NEWS IN A MODELING ACTIVITY, CONT'D

2017

Individual Taxpayers

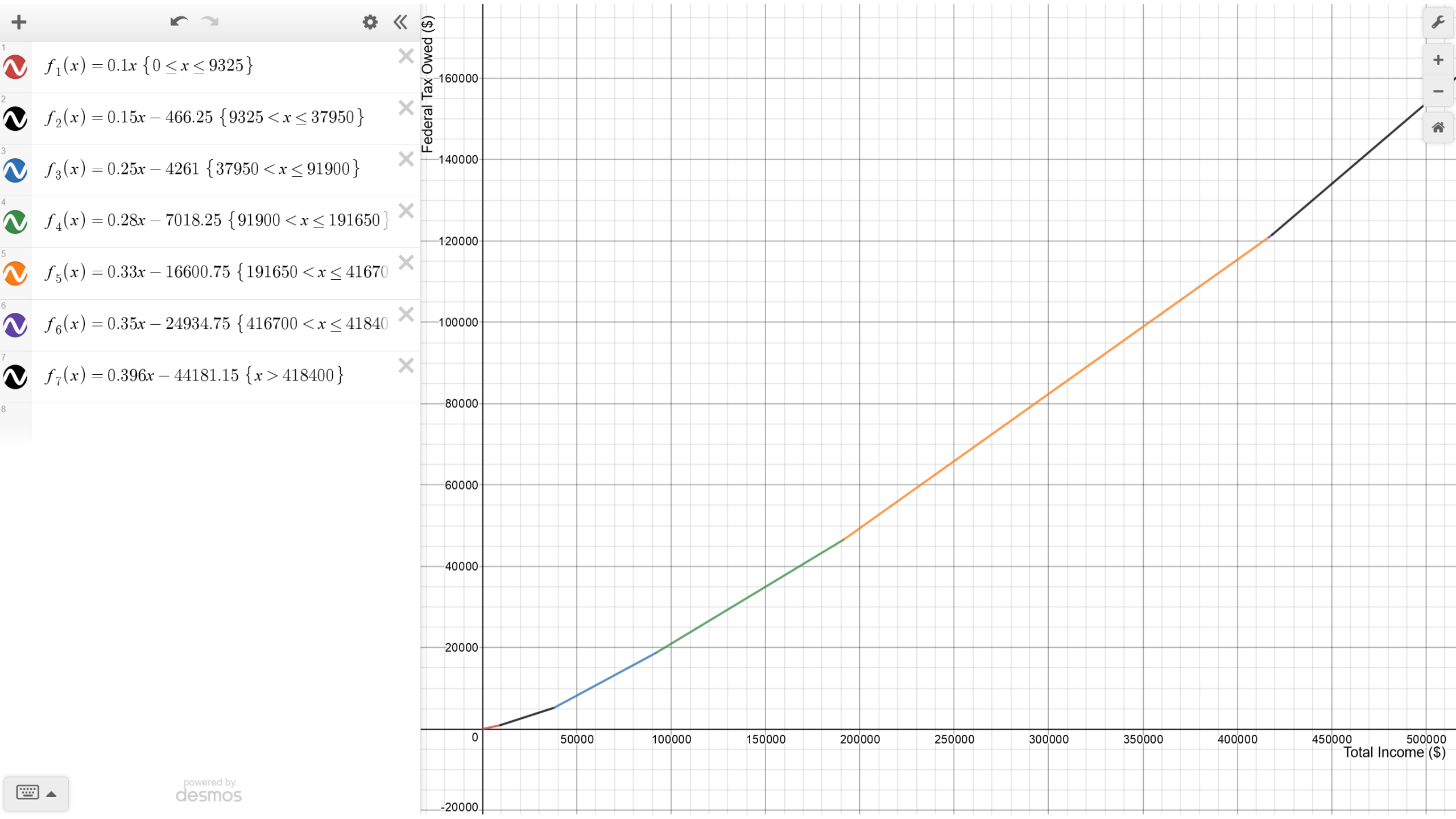
If Taxable Income Is Between:	The Tax Due Is:
0 - \$9,325	10% of taxable income
\$9,326 - \$37,950	\$932.50 + 15% of the amount over \$9,325
\$37,951 - \$91,900	\$5,226.25 + 25% of the amount over \$37,950
\$91,901 - \$191,650	\$18,713.75 + 28% of the amount over \$91,900
\$191,651 - \$416,700	\$46,643.75 + 33% of the amount over \$191,650
\$416,701 - \$418,400	\$120,910.25 + 35% of the amount over \$416,700
\$418,401 +	\$121,505.25 + 39.6% of the amount over \$418,400

2018

Individual Taxpayers

If Taxable Income Is Between:	The Tax Due Is:
0 - \$9,525	10% of taxable income
\$9,526 - \$38,700	\$952.50 + 12% of the amount over \$9,525
\$38,701 - \$82,500	\$4,453.50 + 22% of the amount over \$38,700
\$82,501 - \$157,500	\$14,089.50 + 24% of the amount over \$82,500
\$157,501 - \$200,000	\$32,089.50 + 32% of the amount over \$157,500
\$200,001 - \$500,000	\$45,689.50 + 35% of the amount over \$200,000
\$500,001 +	\$150,689.50 + 37% of the amount over \$500,000





NEWS IN AN INTRODUCTORY ACTIVITY

LOCAL

Triangle Expressway 'the epitome of bad policy,' lawsuit says



BY RICHARD STRADLING

rstradling@newsobserver.com



June 25, 2018 12:00 PM

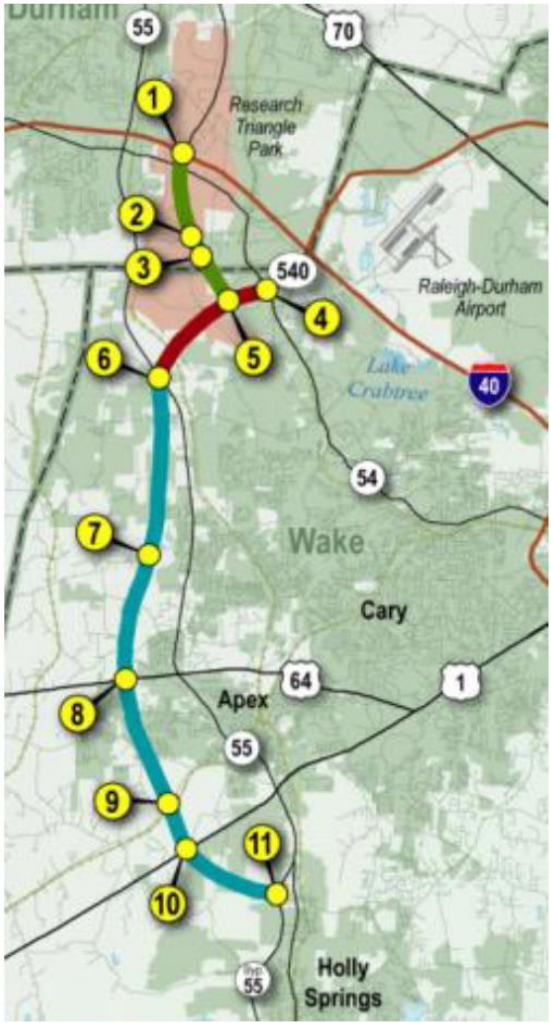
Updated June 25, 2018 07:49 PM



RALEIGH — The environmental groups suing to stop construction of the Triangle Expressway across southern Wake County have expanded their lawsuit to include additional state and federal agencies and new claims for why the groups believe the highway should not be built.

N.C. Department of Transportation officials hope contractors can begin building the six-lane toll road from Holly Springs east toward Interstate 40 early next year. The [Federal Highway Administration gave its final approval](#) for the route of the \$2.24 billion highway earlier this month, allowing the state to pursue environmental and other permits it needs to begin construction.





██████████ used to drive along the Triangle Expressway some afternoons on the way home from NCSSM. Since this is a toll road, along the way there are sensors that record when he passes through certain checkpoints along the route to automate the billing process. If this information were to be passed along to the NC State Troopers, would there be enough evidence to give ██████████ a speeding ticket? The speed limit on this road is 70 mph.

Transaction Date	Posting Date	Transponder /License Plate	Agency	Entry			Exit			Distance Driven
				Toll Zone	Date	Time	Toll Zone	Date	Time	
10/08/13	10/08/13	██████████	NCTA				T06	10/08	17:30	0.0
10/08/13	10/08/13	██████████	NCTA				T18	10/08	17:35	5.6
10/08/13	10/08/13	██████████	NCTA				T26	10/08	17:39	10.8
10/08/13	10/08/13	██████████	NCTA				T34	10/08	17:42	13.7

Toll Zone Listing

- T06 - Ramp - NC147 SB to NC540 SB
- T18 - Mainline-NC540 SB. N Grn Lvl Rd
- T34 - Mainline - NC540 SB, N of NC 55
- T26 - Mainline-NC540 SB, N of Old US1



NEWS IN AN APPLICATION PROBLEM

Neanderthals in Europe Died Out Thousands of Years Sooner Than Some Thought, Study Says



The researchers Thomas Higham and Katerina Douka collected samples for radiocarbon dating from a cave in Russia. Thomas Higham

By Kenneth Chang



In the air we breathe and in the bodies of living things, the natural fraction of carbon that is the isotope C_{14} is extremely small—about 1.35×10^{-12} . So when a living thing dies, the fraction of carbon in its body that is C_{14} is 1.35×10^{-12} , or slightly more than one part in a trillion. Working with numbers so small is certainly possible, but you'll likely find it more comfortable working with numbers that are a little greater. In the light intensity problems above, we defined a function L that gave the intensity of blue light relative to what it would have been at the ocean's surface, such that $L(0)$ was equal to 1. We can do the same thing with C_{14} . Define $C(t)$ to be the amount of carbon 14 in a fossil after t years, relative to the amount that was in the organism when it died. (So $C(0) = 1$.)

The half-life of Carbon 14 is about 5,730 years.

1. Write an expression for $C(t)$ in terms of t , using any convenient equation form.

$$C(t) = \underline{\hspace{4cm}}$$

2. Compute $C(50,000)$ and interpret what it means.

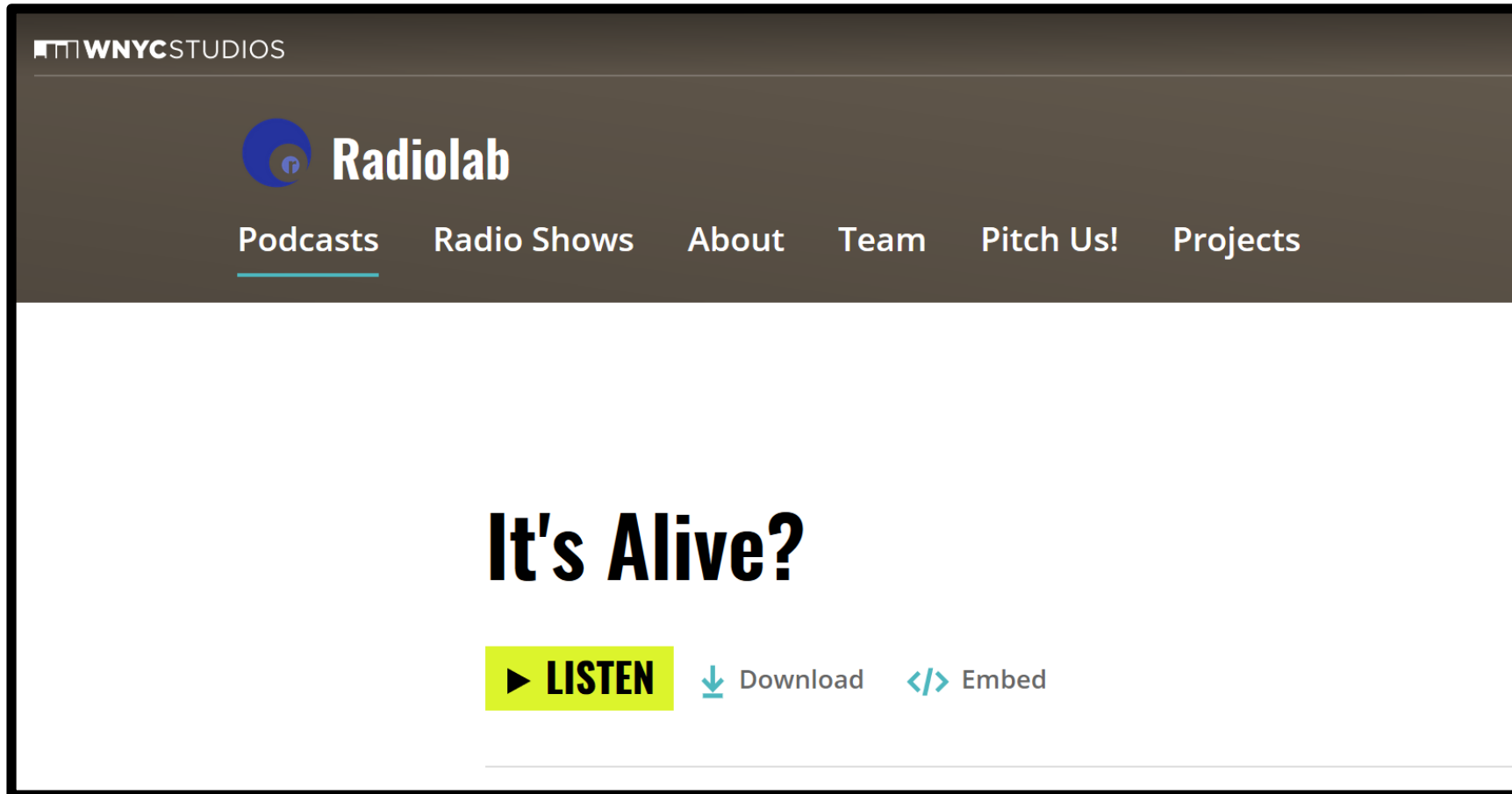
$$C(50,000) = \underline{\hspace{4cm}}$$

Interpretation:

3. Suppose that a scientist extracts a small amount of material from a 50,000-old-fossil. Unknown to her, the sample actually is 99% material from the original organism and 1% material from modern organisms. Relative to the amount of C_{14} in the original organism, how much C_{14} is in the sample? (2.61%)



NEWS IN AN APPLICATION PROBLEM



Location	Population, P	Mean Velocity V (ft/sec)
Brno, Czechoslovakia	341,948	4.81
Prague, Czechoslovakia	1,092,759	5.88
Corte, Corsica	5,491	3.31
Bastia, France	49,375	4.90
Munich, Germany	1,340,000	5.62
Psychro, Crete	365	2.76
Itea, Greece	2,500	2.27
Iraklion, Greece	78,200	3.85
Athens, Greece	867,023	5.21
Safed, Israel	14,000	3.70
Dimona, Israel	23,700	3.27
Netanya, Israel	70,700	4.31
Jerusalem, Israel	304,500	4.42
New Haven, CT, USA	138,000	4.39
Brooklyn, NY, USA	2,602,000	5.05