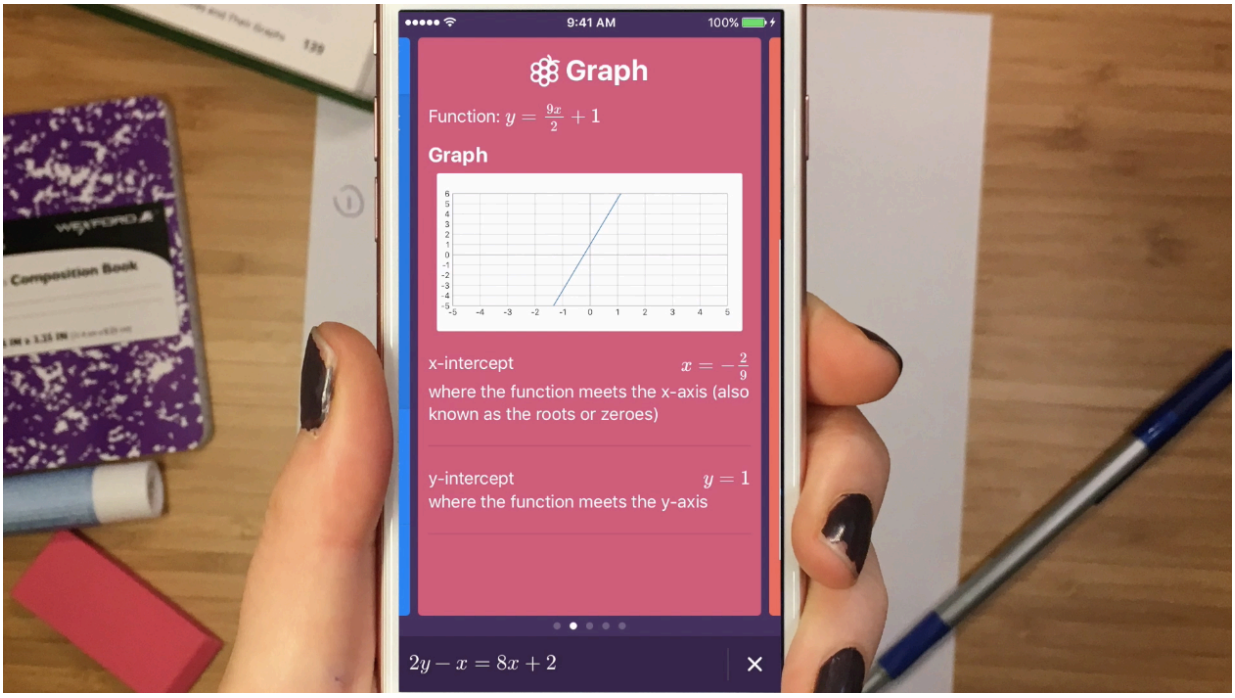
Polynomials without tears thanks to Socratic app

January 22 2017, by Nancy Owano



(Tech Xplore)—School memories include the downsides as well as the uplifting ones. Not understanding what was written in textbooks and poorly explained by teachers are part of the grimmer recollections.

That was then and this is now. Say hello to Socratic, a free app on the Apple App Store that sets the student free of not knowing the answers.

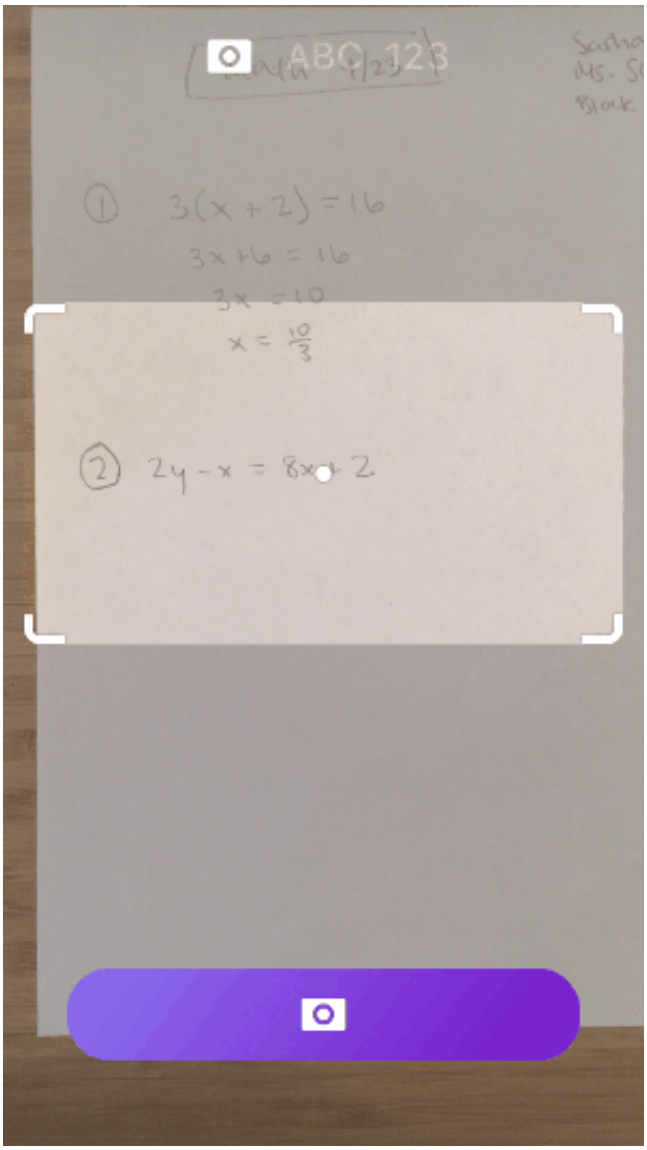
One more thing—it potentially empowers the student to answer similar questions in the future.

The Socratic platform is powered by educators and a community of volunteers. It is an app for iOS but they said they have an Android app in the works.

Homework and exam preparation can benefit from this. Socratic is equipped to handle several areas in the sciences and humanities but a number of tech sites say the math section is quite something.

Adding and subtracting polynomials and adding and subtracting fractions are just two examples of what the math portion can help. The latest news is that Socratic has been updated with enhanced mathematical capabilities.

"Today we're thrilled to release the next major step in making math easy to learn: take a picture of a math equation — typed or handwritten — and we'll break it down step-by-step, and teach you how each step works, for free." (Paul Miller in *The Verge* remarked that "The app is actually designed to answer any kind of school question—science, history, etc.—but the math thing is the slickest part.")



Starting with Algebra problems, "we first show a step-by-step solution to the problem, with each step clearly color-coded and explained." Their engineering team taught a computer how to solve algebra equations step-by-step.

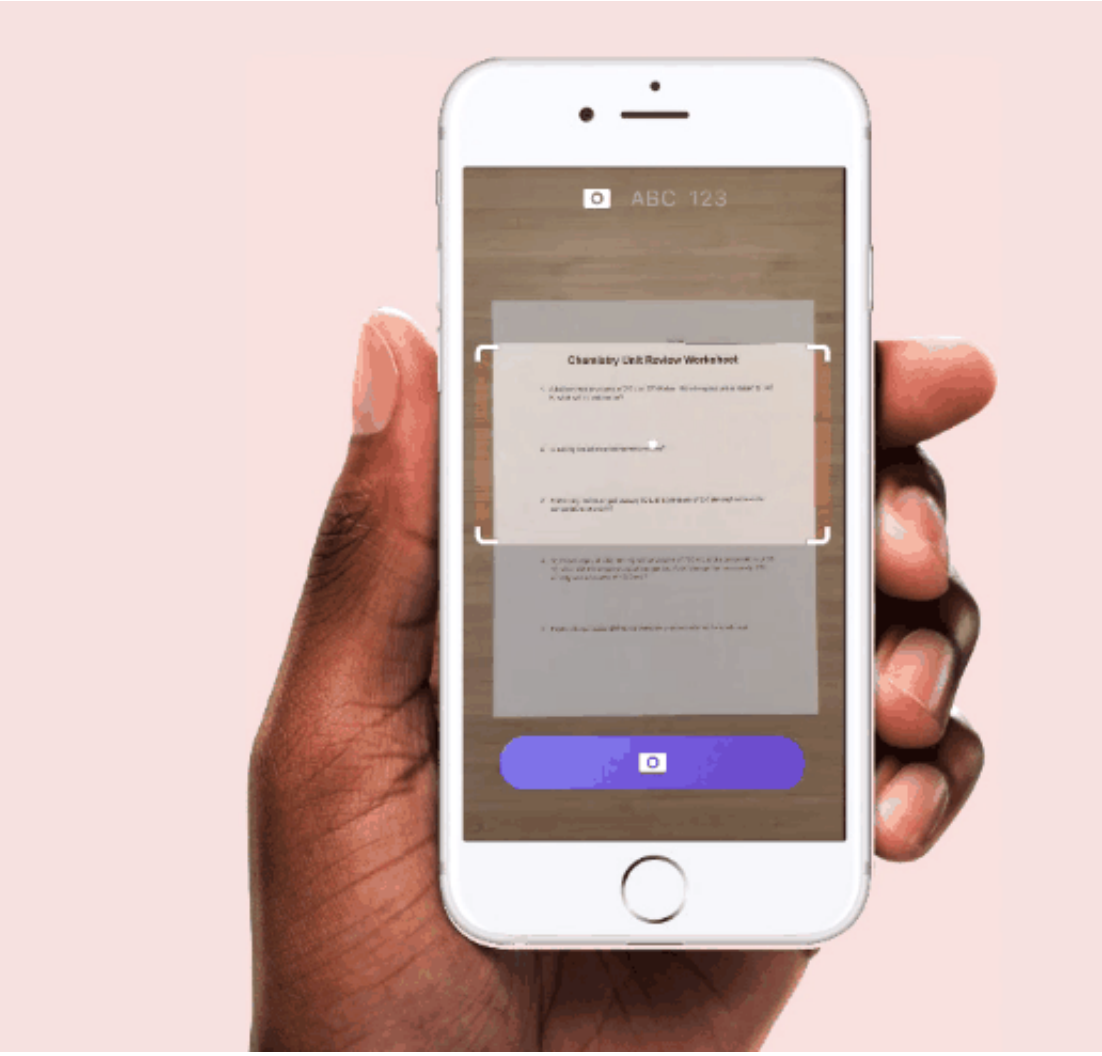
"We then show Explainers, which teach underlying concepts using

simple language and visuals, so students can learn to solve similar problems. Finally, we show graphs, videos, and definitions, adding layers of understanding." Miller in *The Verge* wrote that "for algebra this thing is sick. I pointed it at 2x + 2 = 7x - 5, which I wrote down at random, and it gave me a 10 step process that results in x = 7/5."

One user compared the app to having an electronic tutor 24 hours a day—something to think about for both parents and students, who might feel uncomfortable about the dishonesty of using somehing electronic to belch out the correct answer without understanding why the answer was chosen.

In this instance, the user does get a tutor to help figure out the concepts underlying questions and answers. The Socratic team takes it up a notch, saying "What if you had an amazing teacher by your side whenever you were trying to learn something?" Fundamentally, as a subhead in *The Independent* said, Socratic not only gives the students the answer but shows the methodology.

In creating this app, the team made use of artificial intelligence. Socratic uses AI and data from millions of student questions to understand where a student is stuck.



Answers? According to the site, the answers come from "the Socratic community of teachers, students, and passionate people dedicated to making learning easier."

The organization's goal is to create an open resource for making learning easier. (According to the site, the Socratic community has contributed more than 20 million words to the Creative Commons.)

Miller also reported that "The creator of Socratic just open sourced its step-by-step solver, called mathsteps. There are a lot of computer-based algebra solvers out there, but for Socratic they had to do some extra engineering to get at the steps a human would need to solve the same problem."

More information: socratic.org/

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