

ALGEBRA II – MATH CLASS 10A

Hello, everybody. It's great to be back together as a class.

I hope by now you were successful in retrieving your booklets and calculators so we can get off to a great start.

As we were successful in covering over three quarters of the Algebra II curriculum, before Purim, we have a great amount of flexibility in which material we can utilize in our lessons for the remainder of the school year.

Before we proceed further, I just want to take this opportunity to thank all of you for being such a wonderful Math class. It was truly inspiring to see how many of you were willing to put in so much time, energy and cooperation to understand and tackle even the most complex and demanding Math problems. You guys were a real "dream team" that any Math teacher would be "chalashing" to have.

Getting back to where I left off, since we do have a nice amount of flexibility, we are going to try as much as possible to choose problems that model real life situations especially the current "matzav" we are in.

We will start with June 2016 regents problem #37 found in Algebra II booklet #3 on Modeling Equations, page 5. (work has been attached below) This problem will help explain why it was a disastrous error to combine the anti-malarial drug – Hydroxychloroquine – with the antibiotic Zithromax (Azithromycin). When we do this problem together, you will have a better understanding as to why this combination of medicines, when given improperly supervised, resulted in killing 22% of the people who took them together.

Our telephone conference will take place on Thursday 4:15 – 4:35. Please call 917-932-8638.

In addition to the above problem, please do these additional problems: June 2017
(work has been attached below)

June 2017 Problem #29 page 24 Booklet #3

June 2017 Problem #34 page 25 Booklet #3

June 2017 Problem # 37 page 26 Booklet #3

If you have any questions on the homework, you can contact me at 718-404-8422
or 718-375-9847 between 4:00 – 10:00 PM.

Work may be returned in via any of the following:

Email mathi.mirrer@gmail.com

Fax 718 375 6342

Mail Mirrer Mesivta High School 1791-5 Ocean Parkway Brooklyn NY 11223

Please indicate how you would like your work be returned.

I cannot emphasize enough the importance of doing your homework in a timely
manner.

Everything will be graded, and will count toward your final grade. Even more
importantly, it will be kept on file for the State of NY in place of your Regents
exam and as a proof that you fulfilled your class requirements.

Please remember, as per Common Core requirements, all alternate solutions are
fully acceptable if properly and fully documented.

Looking forward to a successful conclusion to our school year. Keep up the great
work. You guys are really wonderful.

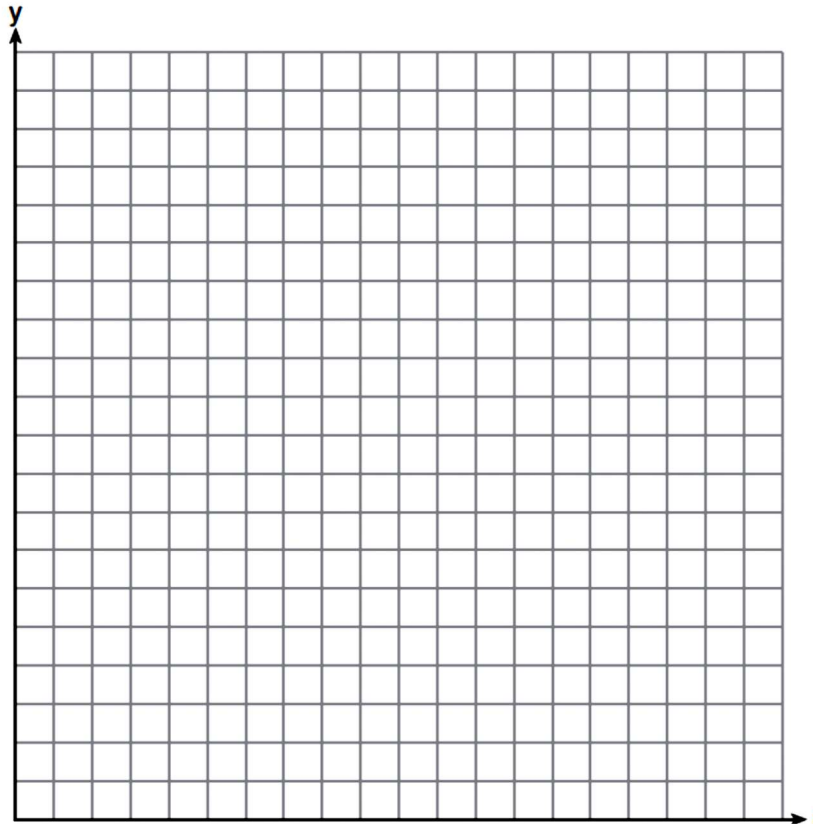
Rabbi E. Isralewitz

JUNE 2016

37 Drugs break down in the human body at different rates and therefore must be prescribed by doctors carefully to prevent complications, such as overdosing. The breakdown of a drug is represented by the function $N(t) = N_0(e)^{-rt}$, where $N(t)$ is the amount left in the body, N_0 is the initial dosage, r is the decay rate, and t is time in hours. Patient A, $A(t)$, is given 800 milligrams of a drug with a decay rate of 0.347. Patient B, $B(t)$, is given 400 milligrams of another drug with a decay rate of 0.231.

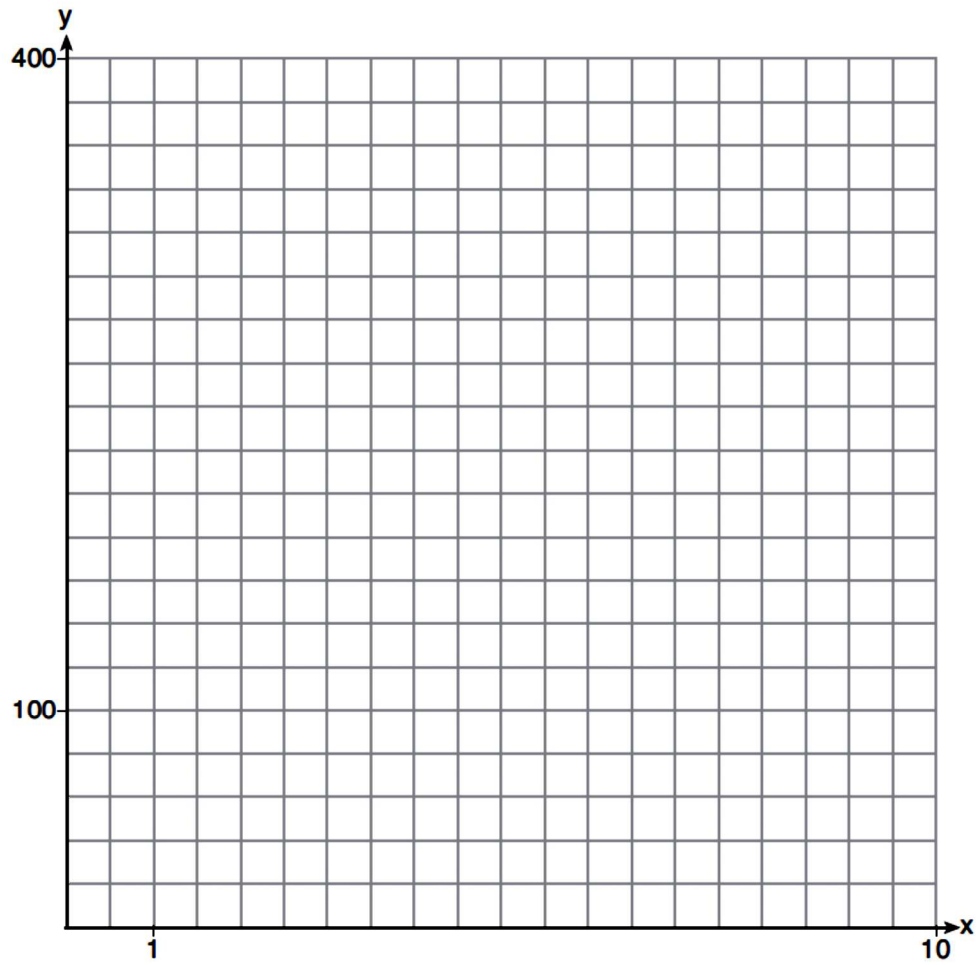
Write two functions, $A(t)$ and $B(t)$, to represent the breakdown of the respective drug given to each patient.

Graph each function on the set of axes below.



JUNE 2017

29 Graph $y = 400(.85)^{2x} - 6$ on the set of axes below.



34 Jim is looking to buy a vacation home for \$172,600 near his favorite southern beach. The formula to compute a mortgage payment, M , is $M = P \cdot \frac{r(1+r)^N}{(1+r)^N - 1}$ where P is the principal amount of the loan, r is the monthly interest rate, and N is the number of monthly payments. Jim's bank offers a monthly interest rate of 0.305% for a 15-year mortgage.

With no down payment, determine Jim's mortgage payment, rounded to the *nearest dollar*.

Algebraically determine and state the down payment, rounded to the *nearest dollar*, that Jim needs to make in order for his mortgage payment to be \$1100.

37 A radioactive substance has a mass of 140 g at 3 p.m. and 100 g at 8 p.m. Write an equation in the form $A = A_0\left(\frac{1}{2}\right)^{\frac{t}{h}}$ that models this situation, where h is the constant representing the number of hours in the half-life, A_0 is the initial mass, and A is the mass t hours after 3 p.m.

Using this equation, solve for h , to the *nearest ten thousandth*.

Determine when the mass of the radioactive substance will be 40 g. Round your answer to the *nearest tenth of an hour*.