Essay 1:
A Mathematical crime

(Also no there's no AI here even though there are em dashes that's because I like them thank you very much, also I hate AI with a passion, this can be said for all of the essays lol) (Also also I don't know how to insert mathematical formulas into google drive so yeah sorry if it reads a bit badly)

By: Jon Aguiar

HEY! Here's a challenge for you, find what's wrong with this picture:

g) $log_2(x-2) + log_2(4x) = 5$

En aquesta equació arribareu a plantejar una equació de 2n grau que té dues solucions:

La solució positiva: $x_1 =$ 4

La solució negativa: $x_2 =$

Here's the translated version from catalan: (This is a small aside about the quality of things not actually math related I just need to vent)—yes I know it's written oddly it's just a direct translation so you can see how little time they had to do this because yes I notified the tutor about this mistake and directly told me that they didn't have enough time to check the stuff from before (not to add how many of the pictures that got used to basically add some colour while being vaguely related used AI which a whole other deal that I'm not going to get into now) so yeah as you can see the quality of education is going down the drain.

g) $log_2(x-2) + log_2(4x) = 5$

In this equation you'll get to make a quadratic equation with 2 answers:

The positive answer: $x_1 =$ 4

The negative answer: $x_2 =$

Now if you know anything about exponentiation and logarithms you'll find the problem very quickly but for those that don't understand them let me explain it so you can solve this problem.

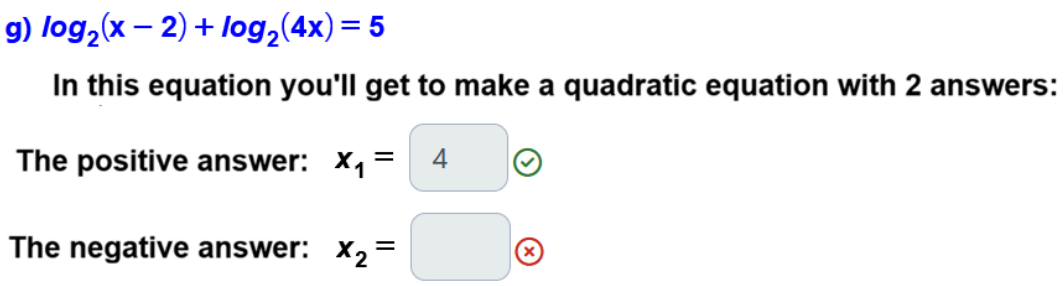
First let's start with exponentiation: if you're reading this (or hearing if Tom reads this) you probably already know what multiplication is so I'm not going to explain it to ya. —I explained it here before I realized I looked like a bottom. Now exponentiation is just multiplication but extended, so for example: 3^3 is 3*3*3 which is 27 (notice how we're just using the same

number throughout specifically the number after the ^ so in this case 3 times) and the like; one thing of note though is how if you start with a positive base (the base is the number that goes before the ^ the number after is called the exponent) you can only get positive numbers because if you multiply two numbers with the same sign you'll always get a positive result but if one is positive and the other is negative you'll get a negative result, now since when you exponentiate something you're multiplying it by itself you'll get a positive result if either the base is positive or if the exponent is even —the 'if the exponent is even' is because when you do -3*-3 you get 9 since it's a negative times a negative but if you do -3*-3*-3 it's the same as 9*-3 which as we established before gives a negative result (-27 in this case).

Now let's get into Logarithms: Working from what we just talked about, logarithms are built from exponents. Basically they're for example: log2(8)=3 where the number between the log and the brackets is the base same as with exponents, the number in the brackets is called the argument, which in this case would be the result of exponentiating the base by a number x, that x being the number after the equal sign which means that, for the example above we can get that log2(8) is the same as 2^x=8 and as you can easily check on a calculator or mentally 2^3=8 so in this case x is 3 which gives us the example of log2(8)=3 which is the one we have above.

Now that I've explained both exponents and logarithms how about you go and try to find what's wrong with the picture again?

(Here's the picture again for your convinience)



Solution below:

As you can probably tell it asks for a negative and a positive answer the thing is that if we were to follow log2(x-2) where x is negative you'd quickly realize that as we've established before any exponentiation with a positive base is always positive (with the exception of if the exponent is an imaginary or complex number but that doesn't matter anyways since the result of the equation is a real number which means that complex numbers although valid wouldn't work here) so for the equation log2(x-2)+log2(4x)=5 it's impossible to have an answer with x being negative which as you can see is just what the questionnaire is asking for which worse yet that questionnaire counts for the grade on the course which means that probably someone has failed math on a flawed question which frankly should be a crime or in this case **a mathematical crime.**