

Hi, I'm Greg. I'm a NYC tutor! I love helping students. I tutor many subjects, assist with homework help, etc. I mainly specialize in specialized tests.

As it turns out, I haven't been able to get to do as many livestreams as I have in past years (yet, hopefully that changes). Therefore, I thought it would be fun to start a Problem Of The Day Series. I will put up a problem and leave it running for a while. You guys will then analyze it, and come up with possible solutions and alternative solutions on your own. I'll eventually post the answer in some manner.

For now we'll play it by ear how that will happen and for how long I'll leave up a problem. But right now I'm thinking of keeping the problem up maybe 2 hours minimum and maybe even in some cases 4 or 5 hours depending upon the dynamics and my situation. Unlike my AMA (Ask Me Anything) livestream sessions, I will not be checking in every few minutes although I may from time to time join into the discussion. Again, the idea is for you guys to discuss out the problem.

Please be respectful to each other in this endeavor and let's make this fun, educational and forward-thinking. Keep the comments within the spirit of what I'm doing here. Please email me at GregsTutoringNYC@gmail.com if needed.

HERE'S THE PROBLEM: <—
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Given:

$$A = 99B = C - 998 = D/999 > 0$$

Which variable in the above statement has the least value?

- A) A B) B C) C D) D E) there is more than one variable

HERE'S THE SOLUTION:
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The statement gives us the following sub-statements:

$$\begin{aligned} A &= 99B \\ A &= C - 998 \\ A &= D/999 \end{aligned}$$

I don't like the constants here but let me try to see if using $B = 10$ as a test candidate will turn out clean:

$$A = 99B = 99 \times 10 = 990$$

$$\begin{aligned} A &= C - 998 \\ 990 &= C - 998 \\ 990 + 998 &= C \\ 1988 &= C \end{aligned}$$

$$\begin{aligned} A &= D/999 \\ 990 &= D/999 \\ 990 \times 999 &= D \\ 989010 &= D \end{aligned}$$

B is the smallest value and will remain so even with other test numbers given our constraint " > 0 "

We could have also approached the problem in another way. If you got rid of the fraction we'd have:

$$\begin{aligned} 999(A = 99B = C - 998 = D/999) \\ 999A = 999 \times 99B = 999C - (999 \times 998) = D \\ 999A = 98901B = 999C - 997002 = D \end{aligned}$$

It should be clear that:

$D > A$ and $D > B$ as D has no coefficient

$A > B$ as its coefficient is smaller than B 's coefficient $\therefore A$ is larger than B

That leaves B pitted against C with $98901B = 999C - 997002$

But if B is say 1 then C must be at around 1000 to surpass the negativity of 997002 but that interim expression value will still be off by many magnitudes less than it needs to be \therefore Choice B

- Greg / GregsTutoringNYC@gmail.com LLAP ☺