

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

What is this? I don't always have time to do a livestream, therefore instead I thought it would be fun to do a Problem Of The Day series. In this series I will put up a problem and 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 the past this has resulted in many interesting discussions. Some questions will be easy, others hard, some perhaps with a twist, some will be SHSAT 8 oriented while some SHSAT 9 oriented.

I'll leave a problem up for about an hour, however depending upon the dynamics and complexity of the question it could be much longer. Unlike my AMA (Ask Me Anything) livestream sessions, I may not always be able to join in the discussion. Again, the idea is for you guys to discuss things out.

Please be respectful in this endeavor. Let's keep this fun, educational, and forward-thinking. Keep your comments within this spirit. If needed, feel free to email me at GregsTutoringNYC@gmail.com. Past questions are at <https://www.GregsTutoringNYC.com/POTD>

HERE'S THE PROBLEM: <—

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The least of 5 consecutive integers is $x - 2$ and the greatest is g . What is the value of:

$$\frac{(2g - 2x)}{(32)^{-2/3}}$$

(That is, $2g - 2x$ divided by 32 , that to the $-2/3$ power)

HERE'S THE SOLUTION:

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The 5 consecutive integers would be: $x - 2$, $x - 1$, x , $x + 1$, $x + 2$

g is the same as $x + 2$.

$(2g - 2x)/32$ is the same as $(2(g - x))/32$ is the same as $g - x$ divided by 16 .

Substituting for g we get $x + 2 - x$ divided by 16 which is $2/16 = 1/8$

Anything to a negative exponent is 1 divided by that same thing to a positive exponent. That is x^{-y} is 1 divided by x^y .

Hence $1/8$ to the $-2/3$ power is 1 divided by $1/8$ to the $2/3$ power.

A fraction to a power is the same as the numerator to that power divided by the denominator to that power.

Hence $1^{(2/3)}$ is 1 . Also, $8^{(2/3)}$ is either the cube root of 8 and then that squared, or the square of 8 and then take the cube root of that.

So either the cube root of 8 is 2 and 2^2 is 4 . Or, $8^2 = 64$, and the cube root is 4 . Either way we get 4 .

Remember from earlier we ended up with 1 divided by some stuff. That stuff gave us the 1 and the 4 so we have $1/4$.

And 1 divided by $1/4$ involves division by a fraction, whereas we do KCF (Keep, Change, Flip) or apply the rule that division by a fraction is the same as multiplication by the fraction's reciprocal. Either way we get $1 \times 4/1$ and that is 4 . Also, earlier we could have just said that 1 divided by $1/8$ to the $2/3$ power is 8 to the $2/3$ power, which is 4 . Also, $-2/3$ is the same as $(-1) \times 2/3$ so we could have applied the exponent of -1 to $(2g - 2x)/32$ and gotten $32/(2g - 2x)$, and hence the 8 , from the get go.