$$\frac{(3x^2)^2 y^4}{3y^2}$$

Thanks for signing up Breanna W 😄. I'm finding you a tutor now.

Aug 24th 2:24:12 am

I'm here to help you prepare for your tutoring session. You can talk to me by tapping the orange button that appears at the bottom 👇

Aug 24th 2:24:14 am

TUTOR FOUND, NOW REVIEWING PROBLEM

Aug 24th 2:24:18 am

Hi 👋

Aug 24th 2:24:18 am

The tutor will spend a minute reviewing your problem so when the session begins, you can start solving right away!

Aug 24th 2:24:20 am

Tutors care just as much about learning as finding the answer so be sure to participate, and ask questions if you aren't following along ✅

Aug 24th 2:24:23 am

SESSION STARTED AT 8:24 PM

Aug 24th 2:24:32 am

Hello Breanna! :)

Aug 24th 2:24:35 am

Hi

Aug 24th 2:24:43 am

Do we need to simplify the expression [(3x^2)^2 y^4]/(3y^2)?

Aug 24th 2:25:18 am

✓ **A1: Evaluate immediately whether you understand the problem**

Yes

Aug 24th 2:25:28 am

Alright!

Aug 24th 2:25:31 am

Have you already tried any work on this problem?

Aug 24th 2:25:36 am
✓ *A1: Determine the student's progress*

I just need help starting it

Aug 24th 2:26:03 am

No problem, we will work together to find the solution!

Aug 24th 2:26:18 am
✓ *C2: Reassure the student they are not alone; use "we" and "us" language*

What can we do with the exponent that is outside of the parentheses?

Aug 24th 2:26:34 am
✓ *A1: Probe the student's understanding of concepts needed to move forward*

Wouldn't the 2 on the outside of the parentheses multiply with the inside of the parentheses

Aug 24th 2:27:56 am

That's correct, we need to multiply the exponents. What do we do with the 3 that is in the parentheses?

Aug 24th 2:28:40 am
✓ *B2: Use guiding questions that help to structure the steps in a problem*

Make it a 6?

Aug 24th 2:29:06 am

Or a 9?

Aug 24th 2:29:28 am

Good try! However, it is not a multiplication, it should go as an exponent.

Aug 24th 2:29:35 am
✓ *C2: Treat mistakes as positive learning experiences*

Exactly! It is 9, because 3^2 is 9.

Aug 24th 2:29:45 am
✓ *B2: Explain rationale for steps*

Would you like to try to simplify that part and share an image of your work for me to check it?

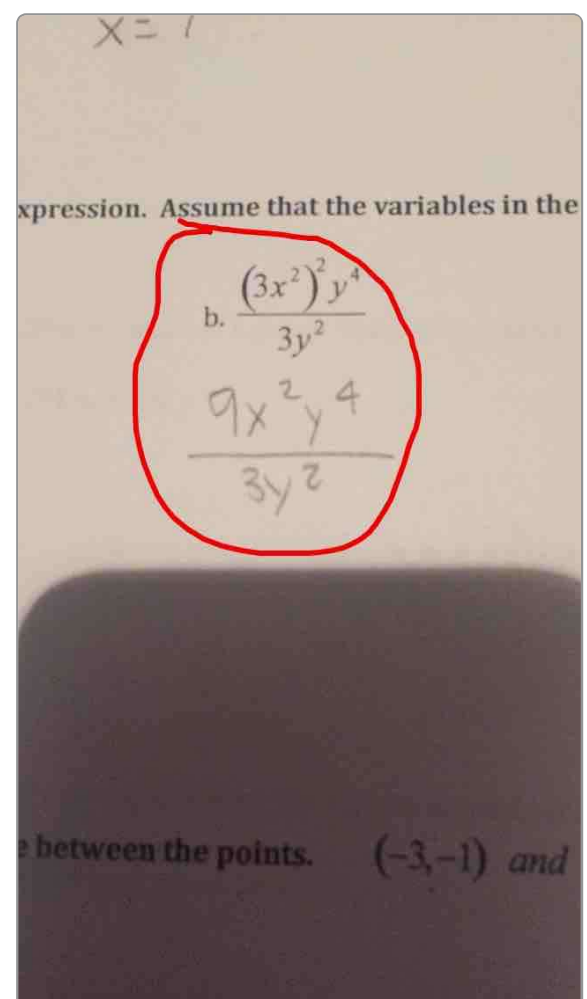Aug 24th 2:29:56 am
✓ *C3: Encourage to take the next step*

Got it.

Aug 24th 2:30:05 am

Great! Please share an image of what you did for me to make sure that we are on the right track.

Aug 24th 2:30:39 am
✓ *C1: Check in with the student to ensure they are following*

Aug 24th 2:31:02 am

Good try! Let's review that step. Remember that when we have exponent of exponent we need to multiply them.

Aug 24th 2:31:43 am

✓ **C2: Treat mistakes as positive learning experiences**

Let me show you an example.

Aug 24th 2:31:46 am

✓ **C3: Present a similar problem as an example and demonstrate how to use the concept/formula needed to solve it.**

$$\left(7z^3\right)^2 = 7^2 \cdot z^{3\cdot2} = 49z^6$$

Aug 24th 2:32:05 am

Did you receive the image?

Aug 24th 2:32:08 am

So the exponent contributes to both numbers?

Aug 24th 2:32:52 am

Exactly! Contributed to the numbers and also to the variables.

Aug 24th 2:33:08 am

It is like distributing the exponent.

Aug 24th 2:33:18 am

✓ **B2: Explain rationale for steps**

Got it.

Aug 24th 2:33:29 am

Great!

Aug 24th 2:34:11 am

✓ **C2: Use encouraging words**

$$\left(7z^3\right)^2 = 7^2 \cdot z^{3\cdot2} = 49z^6$$

$$\left(3zxy\right)^2 = 9z^2x^2y^2$$

Aug 24th 2:34:11 am

✓ **C3: Present a similar problem as an example and demonstrate how to use the concept/formula needed to solve it.**

Could you try that step again and share another image of your work for me to check it?

Aug 24th 2:34:26 am

✓ **C1: Check in with the student to ensure they are following**

Like do another problem like it? Or show you me new answer?

Aug 24th 2:36:06 am

Show me your new answer, we needed to fix the expression. So, I would like to see what you did to make sure that we are on the right track.

Aug 24th 2:36:49 am

Ok

Aug 24th 2:37:17 am

Assume that the variables

b. $\dfrac{\left(3x^2\right)^2 y^4}{3y^2}$

$9x^{4}\cdot y^{4}$ over $3y^{2}$

ce between the points. $(-3,-1)$

Aug 24th 2:37:42 am

Well done!

Aug 24th 2:37:59 am
✓ *C2: Use encouraging words*

What is the next step?

Aug 24th 2:38:01 am
✓ *C3: Encourage to take the next step*

> You would divide the 9 and the 3. And once you get the answer the 3 would be on top. If that makes sense
>
> Aug 24th 2:38:53 am

That's perfect! :)

Aug 24th 2:39:03 am
✓ *C2: Use encouraging words, Use friendly punctuation*

Is there anything else that we can simplify?

Aug 24th 2:39:08 am
✓ *C3: Expand scope of guiding questions if student is succeeding*

> The y^4 with the y^2
>
> Aug 24th 2:39:37 am

Good! Would you like to try to simplify the expression and share an image of your work for me to check it?

Aug 24th 2:40:05 am
✓ *C3: Encourage to take the next step*

ression. Assume that the variables in th

b. $\dfrac{\left(3x^2\right)^2 y^4}{3y^2}$

$9x^{4}\cdot y^{4}$ over $3y^{2}$

$3x^{4}\, y^{2}$

between the points. $(-3,-1)$ and

Perfectly done!

Aug 24th 2:40:38 am

✓ **C2: Use encouraging words, Use friendly punctuation**

Good job! :)

Aug 24th 2:40:39 am

✓ **C2: Use encouraging words, Use friendly punctuation**

Is there anything you would like me to clarify about this problem?

Aug 24th 2:40:46 am

✓ **C1: Check in with the student to ensure they are following**

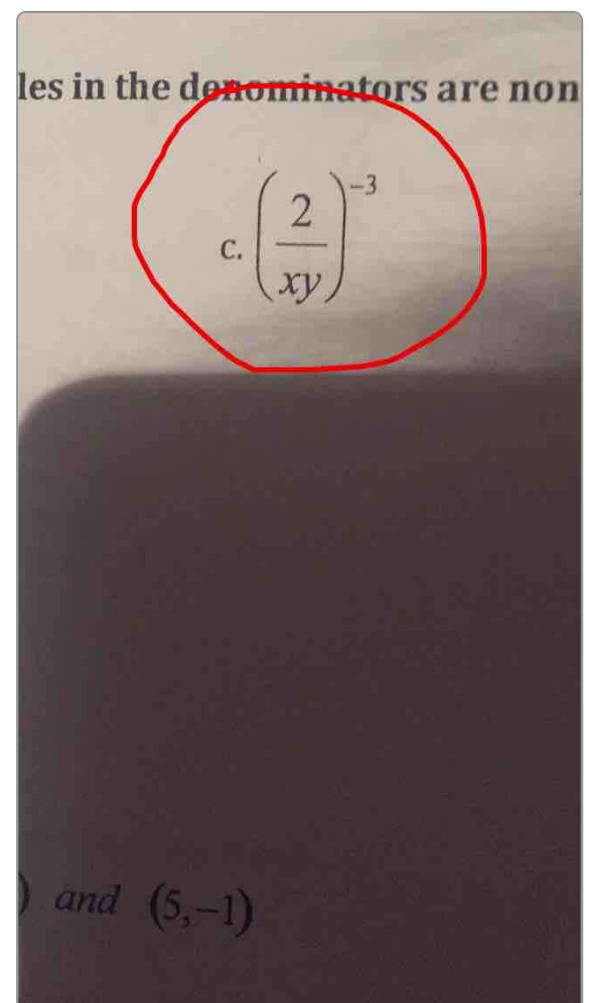No thank you!

Aug 24th 2:41:01 am

You are very welcome!

Aug 24th 2:41:06 am

Is there anything else I can help you with?

Aug 24th 2:41:11 am

✓ **Tutor checks to see if the student has another problem rather than concluding the session**

les in the denominators are non

c. $\left(\dfrac{2}{xy}\right)^{-3}$

) *and* $(5, -1)$

Aug 24th 2:42:01 am

What does the problem exactly ask for?

Aug 24th 2:42:20 am

✓ **A1: Evaluate immediately whether you understand the problem**

To simplify the expression

Aug 24th 2:42:57 am

What does it say about the denominators?

Aug 24th 2:43:09 am

✓ **A1: Evaluate immediately whether you understand the problem**

They are nonzero

Aug 24th 2:43:23 am

Alright!

Aug 24th 2:43:42 am

What do you think we could try first?

Aug 24th 2:43:46 am

✓ **A1: Probe the student's understanding of concepts needed to move forward**

The exponent outside of the parentheses

Aug 24th 2:44:06 am

Good! What do we need to do with that exponent?

Aug 24th 2:44:32 am

✓ **A1: Probe the student's understanding of concepts needed to move forward**

Contribute to the 2?

Aug 24th 2:45:31 am

Good attempt! However, when there is a division in parentheses, the process is the same as when there is a multiplication. We need to distribute that exponent on each number and variable on top and bottom.

Slowest response   **Aug 24th 2:46:35 am**

✓ **C2: Treat mistakes as positive learning experiences**

So distribute to the 2, x, and y?

Aug 24th 2:47:26 am

That's right!

Aug 24th 2:47:48 am

✓ **C2: Use encouraging words/friendly punctuation**

$$\left(\frac{5x^3}{zy^2}\right)^2 = \frac{25\ x^6}{z^2\ y^4}$$

Aug 24th 2:47:55 am

✓ **C3: Present a similar problem as an example and demonstrate how to use the concept/formula needed to solve it.**

Did you receive the example?

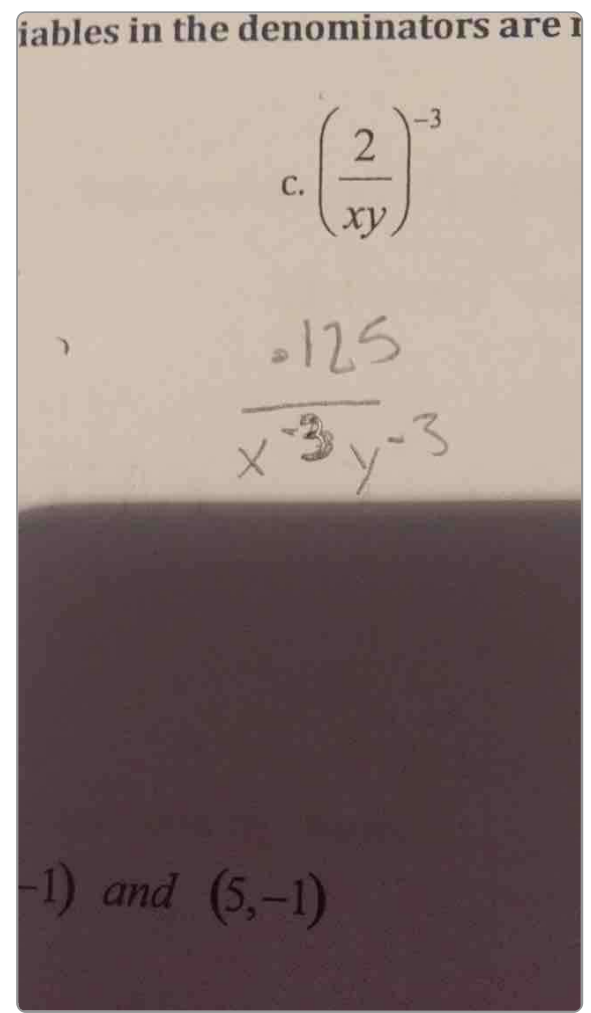Aug 24th 2:48:01 am

I did

Aug 24th 2:48:43 am

Great! Would you like to try to simplify the expression and share an image of your work for me to check it?

Aug 24th 2:49:02 am

✓ **C3: Encourage to take the next step**

Ok

Aug 24th 2:49:13 am

iables in the denominators are i

$$c.\ \left(\frac{2}{xy}\right)^{-3}$$

$$\frac{.125}{x^{-3}y^{-3}}$$

−1) *and* (5,−1)

Aug 24th 2:50:25 am

> Or would the .125 turn into a fraction?
> Aug 24th 2:51:23 am

That's right! We need to work with fractions. First, let's distribute the negative exponent to get 2^-3. Instead of working with decimal numbers let's try to convert the negative exponents to positive.

Aug 24th 2:51:59 am
✓ *C2: Reassure the student they are not alone; use "we" and "us" language*

Do you know how to convert negative exponents to positive?

Aug 24th 2:52:06 am
✓ *C3: Share prior knowledge*

> No I don't remember how to convert negative exponents to positive
> Aug 24th 2:53:11 am

We need to flip the fraction. For example, if we have the expression 5^-2 / x^-6 and we want to convert the negative exponents to positive we need to flip the fraction and change the signs to get x^6 / 5^2, then simplify to x^6 / 25.

Aug 24th 2:53:29 am
✓ *C3: Present a similar problem as an example and demonstrate how to use the concept/formula needed to solve it.*

$$\frac{5^{-2}}{x^{-6}} = \frac{x^{6}}{5^{2}} = \frac{x^{6}}{25}$$

Aug 24th 2:54:33 am

Did you understand that concept?

Aug 24th 2:54:38 am
✓ *C1: Check in with the student to ensure they are following*

> Yes I did
> Aug 24th 2:54:50 am

Great!

Aug 24th 2:54:59 am
✓ *C2: Use encouraging words/friendly punctuation*

Could you now try to apply it to the problem and share an image of your work for me to check it?

Aug 24th 2:55:10 am
✓ *C3: Encourage to take the next step*

> So the .125 would turn into 1/8?
> Aug 24th 2:55:16 am

Perfect!

Aug 24th 2:55:25 am
✓ *C2: Use encouraging words/friendly punctuation*

What about the variables?

Aug 24th 2:55:30 am
✓ *C3: Encourage to take the next step*

> They would flip?
> Aug 24th 2:55:48 am

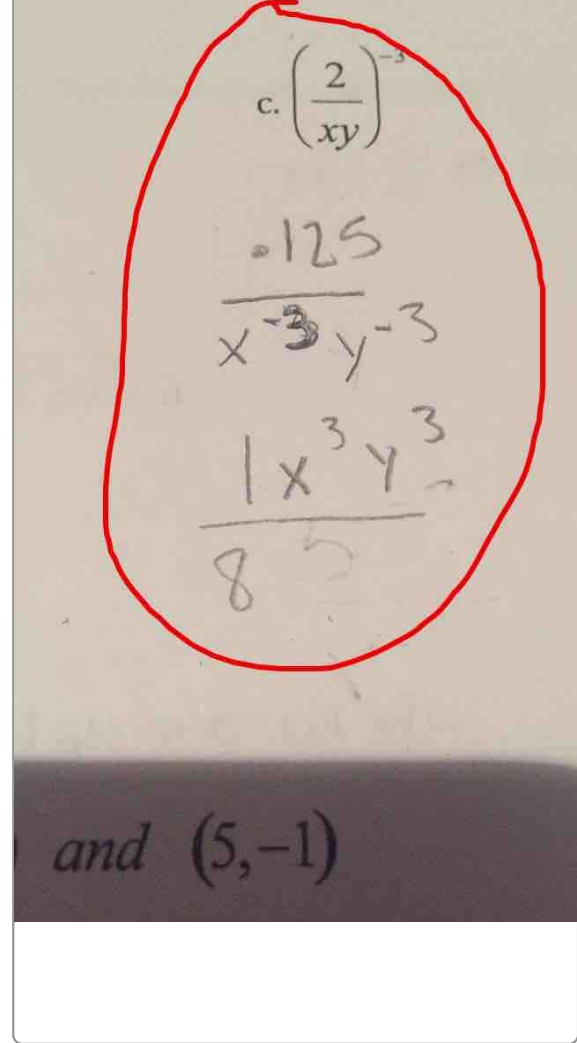Yes, because they also have negative exponents.

Aug 24th 2:56:02 am
✓ *B2: Explain rationale for steps*

$$\frac{5^{-2}}{x^{-6}} = \frac{x^{6}}{5^{2}} = \frac{x^{6}}{25}$$

Aug 24th 2:56:20 am
✓ *C3: Present a similar problem as an example and demonstrate how to use the concept/formula needed to solve it.*

c. $\left(\dfrac{2}{xy}\right)^{-3}$

$$\dfrac{.125}{x^{-3}y^{-3}}$$

$$\dfrac{1x^3y^3}{8}$$

and $(5,-1)$

Aug 24th 2:56:47 am

Wouldn't the 8 be on top?

Aug 24th 2:57:18 am

Well done! Is it necessary to put a 1 in front of the variables?

Aug 24th 2:57:25 am

Sorry, why do you think that the 8 should be on top?

Aug 24th 2:57:34 am
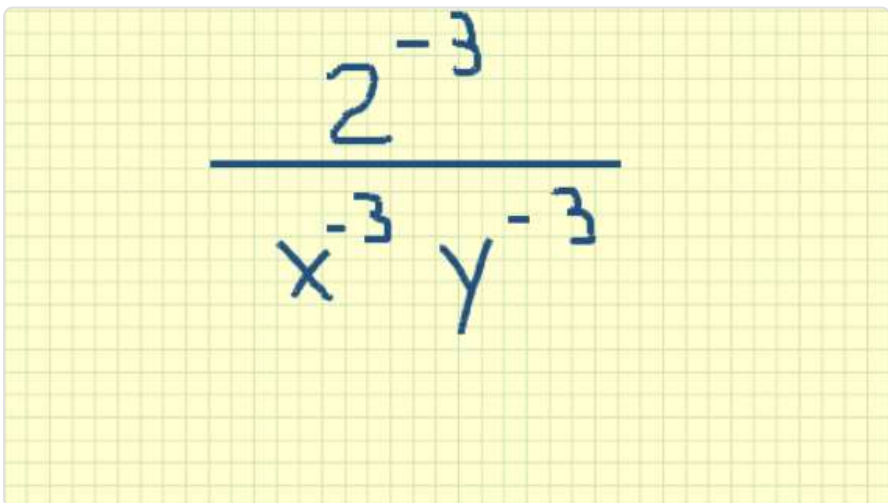✓ **C3: Ask open questions that justify thought processes**

I thought that after you put it in a fraction, then you would flip the 8 with the variables

Aug 24th 2:59:06 am

We flip the fraction only when we want to change the negative exponent to positive. The expression that we got at the beginning was:

Aug 24th 2:59:42 am
✓ **B2: Explain rationale for steps**

$$\dfrac{2^{-3}}{x^{-3}\,y^{-3}}$$

Aug 24th 3:00:02 am

Right?

Aug 24th 3:00:14 am

Yes

Aug 24th 3:00:40 am

Great! So, now we want to change the negative exponents to positive.

Aug 24th 3:00:56 am

So, we should flip the fraction.

Aug 24th 3:01:02 am

What expression do we get if we flip it?

Aug 24th 3:01:12 am

✓ **C3: Encourage to take the next step**

x^3 y^3/ 8

Aug 24th 3:01:46 am

Perfect! Now you got it! :)

Aug 24th 3:01:57 am

✓ **C2: Use encouraging words/friendly punctuation**

Did you understand why the 8 goes on bottom?

Aug 24th 3:02:19 am

✓ **C1: Check in with the student to ensure they are following**

Yes

Aug 24th 3:02:28 am

Alright!

Aug 24th 3:02:32 am

Is there anything you would like me to clarify about what we did?

Aug 24th 3:02:38 am

✓ **C1: Check in with the student to ensure they are following**

No thank you! :)

Aug 24th 3:02:54 am

You are very welcome!

Aug 24th 3:02:59 am

Is there anything else I can help you with?

Aug 24th 3:03:05 am

✓ **Tutor checks to see if the student has another problem before concluding the session**

No thank you

Aug 24th 3:04:09 am

You are very welcome Breanna! You did a good job! :)

Aug 24th 3:04:27 am

✓ **C2: Use encouraging words/friendly punctuation**

Thanks for using Yup!

Aug 24th 3:04:30 am

✓ **Tutor thanks student for using Yup**

Have a good one!

Aug 24th 3:04:33 am

Bye bye

Aug 24th 3:04:34 am

Bye

Aug 24th 3:04:40 am

Student ended session

Aug 24th 3:04:45 am