

$$8, \quad y = 5 - 2x^2$$

$$x = 5 - 2y^2$$

$$5 + x = -2y^2$$

Feb 8th 5:41:02 pm

Sydney, I'm so excited you're back! I'll move you up to the front of the line 😊

Feb 8th 5:41:04 pm

BTW, the tutor will spend a minute reviewing your problem so when the session begins, you can start solving as quickly as possible.

Feb 8th 5:41:06 pm

TUTOR FOUND, NOW REVIEWING PROBLEM AT NO CHARGE

Feb 8th 5:41:09 pm

SESSION STARTED AT 9:41 AM

Feb 8th 5:41:28 pm

Hi, this is finding the inverse of each function

Feb 8th 5:41:46 pm

Hi Sydney, my name is Oliver and I'll be helping you with this problem

Feb 8th 5:42:15 pm ✓ **Introduction: Tutor greets student by name and introduces himself**

OK, I can see a few slight errors in your work so far

Feb 8th 5:43:32 pm ✓ **A1: Checks student's uploaded progress**
C2: Acknowledge student's mistake without causing stress

You started off correctly by switching the x and the y and starting to solve for y

Feb 8th 5:43:57 pm

On the third line you moved the positive 5 from the right hand side of the equation to the left hand side

Feb 8th 5:44:52 pm

How do you move a positive number from one side of an equation to the other?

Feb 8th 5:45:21 pm ✓ **C3: Guides student towards correcting their own mistake**

Oh it should be -5

Feb 8th 5:45:29 pm

That's right, we should subtract the 5 from both sides

Feb 8th 5:45:50 pm ✓ **B2: Clarifies step further**

8. $y = 5 - 2x^2$
 $x = 5 - 2y^2$
 $x - 5 = -2y^2$

Feb 8th 5:45:53 pm

OK, now how do you think we should proceed?

Feb 8th 5:46:47 pm ✓ **C3: Open guiding question**

Divide, that's what I got stuck on is how to

Feb 8th 5:47:07 pm

Right, so what are we trying to divide by?

Feb 8th 5:48:07 pm ✓ **C3: Guiding question**

-2

Feb 8th 5:48:18 pm

OK, so how what does the left side of the equation look like after dividing by -2?

Feb 8th 5:48:45 pm ✓ **C3: Encourage student to take the next step**

8. $y = 5 - 2x^2$
 $x = 5 - 2y^2$
 $\frac{x - 5}{-2} = \frac{-2y^2}{-2}$

Feb 8th 5:49:17 pm

Yup, that's a great start, now how should the right side look?

Feb 8th 5:51:05 pm ✓ **C2: Encouraging language / C3: Guiding question**

y^2

Feb 8th 5:51:16 pm

That's right, we've gotten rid of the -2, we are just left with y^2

Feb 8th 5:51:59 pm ✓ **B2: Clarifies step further**

Is the left side going to stay as it is?

Feb 8th 5:52:14 pm

How can we simplify the left side?

Feb 8th 5:53:38 pm ✓ **C3: Invite student input**

OK, no problem

Feb 8th 5:54:33 pm ✓ **C2: Reassure the student**

we've divided by a negative number and we could leave it as it is but it is easier to work with if we somehow deal with the negative sign in front of the two

Feb 8th 5:55:24 pm

✓ **C1: Adapt instruction to student gap**

$$\frac{x-5}{(-2)}$$

Feb 8th 5:55:43 pm

It might be easier to think of our division in parenthesis

Feb 8th 5:55:55 pm

we want to distribute the negative sign throughout the fraction instead of just leaving it on the bottom

Feb 8th 5:56:20 pm

any ideas on how we can do this?

Feb 8th 5:56:27 pm ✓ **C3: Open question**

Make the top and bottom negative?

Feb 8th 5:56:49 pm

That's exactly right

Feb 8th 5:57:04 pm

if we multiply the top by -1 and the bottom by -1, we are multiplying the fraction by $-1/-1$ which is 1

Feb 8th 5:57:45 pm ✓ **B2: Clarifies step further**

so what does it look like after multiplying the top and bottom by negative 1?

Feb 8th 5:58:08 pm ✓ **C3: Encourage student to take the next step**

$$\frac{x-5}{(-2)} = \frac{-x+5}{2}$$

Nice job!

Feb 8th 5:58:45 pm ✓ **C2: Positive language**

That's right

Feb 8th 5:58:53 pm

OK, now what is our next step?

Feb 8th 5:59:25 pm ✓ **C3: Invite student input**

Square out to get rid of y^2

Feb 8th 5:59:44 pm

Yes, we want to get rid of the y^2

Feb 8th 5:59:59 pm

What does our equation look like now?

Feb 8th 6:00:20 pm ✓ **C3: Encourage student to take the next step**

$$\frac{x-5}{(-2)} = -dy^2$$

$$\sqrt{\frac{-x+5}{2}} = \sqrt{y^2}$$

$$\sqrt{\frac{x+5}{2}} = y$$

Feb 8th 6:00:32 pm

The operation you used was absolutely correct

Feb 8th 6:01:11 pm

✓ **C2: Acknowledge student's mistake without causing stress**

I can see a slight error though

Feb 8th 6:01:26 pm

take another look at how you wrote the equation after applying the square root

Feb 8th 6:02:06 pm

Is it the $-x$?

Feb 8th 6:02:23 pm

yes, that's right

Feb 8th 6:02:30 pm

the $-x$ needs to stay negative

Feb 8th 6:03:29 pm ✓ **B2: Clarifies step further**

and there is one other thing

Feb 8th 6:03:34 pm

when we take the square root of an expression, is there anything we need to remember?

Feb 8th 6:03:59 pm ✓ **C3: Encourages student to share existing knowledge**

I don't know

Feb 8th 6:04:37 pm

Whenever we are taking the square root of an expression, we need to put a \pm sign in front of the square root symbol

Feb 8th 6:05:30 pm

✓ **C1: Adapt instruction to student gap**

Will there ever be a time when we don't?

Feb 8th 6:05:59 pm

Nope, whenever we take the square root of something it has two answers

Feb 8th 6:07:03 pm

for instance

Feb 8th 6:07:05 pm

the square root of 9

Feb 8th 6:07:08 pm

could be -3 or positive 3

Feb 8th 6:07:16 pm

the same reasoning applies to the problem we just did, and to any problem where we take the square root of something

Feb 8th 6:07:43 pm

Okay seems understandable

Feb 8th 6:08:10 pm

Thanks :)

Feb 8th 6:08:14 pm

No problem, I'm glad I could help

Feb 8th 6:08:20 pm ✓ **Conclusion: Warm send off**

Student ended session

Feb 8th 6:08:25 pm