

PLEASE HELP ME Given $(x + 7)^2 = 36$, Select The Values Of X. X = 13 X = 1 X = 29 X = 42

PLEASE HELP ME Given $(x + 7)^2 = 36$, Select The Values Of X. X = 13 X = 1 X = 29 X = 42 is a common math problem that many students encounter when learning algebra. This type of problem involves solving for the variable (x) in a quadratic or algebraic expression, and understanding how to approach it is essential for mastering math fundamentals. In this article, we will explore how to solve the equation $((x + 7)^2 = 36)$, analyze the possible solutions for (x) , and help you select the correct values from the options provided: 13, 1, 29, and 42. Whether you're a student struggling with algebra or someone looking to sharpen your problem-solving skills, this guide will clarify the steps needed to find the correct values of (x) .

Understanding the Equation $((x + 7)^2 = 36)$

Breaking Down the Equation

The equation at hand is $((x + 7)^2 = 36)$. To solve it, we need to understand each component:

- $(x + 7)$: This indicates that (x) is multiplied by 7.
- $(^2)$: This signifies that the entire term $(x + 7)$ is squared.
- $= 36$: The result of squaring $(x + 7)$ equals 36.

The goal is to find all values of (x) that satisfy this equation.

Step-by-Step Solution Process

Step 1: Rewrite the Equation

Start by expressing the equation in a more manageable form:

$$\begin{aligned} & \sqrt[4]{(x \times 7)^2} = 36 \\ & \end{aligned}$$

This can also be written as:

$$\begin{aligned} & \sqrt[4]{(7x)^2} = 36 \\ & \end{aligned}$$

Step 2: Take the Square Root of Both Sides

To isolate $\sqrt[4]{(7x)^2}$, take the square root of both sides:

$$\begin{aligned} & \sqrt[4]{(7x)^2} = \pm \sqrt[4]{36} \\ & \end{aligned}$$

Since the square root of a square yields the absolute value:

$$\begin{aligned} & \sqrt[4]{(7x)^2} = 6 \\ & |7x| = 6 \\ & \end{aligned}$$

This leads to two possible equations:

$$\begin{aligned} & \sqrt[4]{(7x)^2} = 6 \quad \text{or} \quad \sqrt[4]{(7x)^2} = -6 \\ & \end{aligned}$$

Step 3: Solve for x

Now, solve each equation separately:

- For $(7x = 6)$:

$$\begin{aligned} & \sqrt[4]{(7x)^2} = 6 \\ & x = \frac{6}{7} \\ & \end{aligned}$$

- For $(7x = -6)$:

$$\begin{aligned} & \left[\right. \\ & x = \frac{-6}{7} \\ & \left. \right] \end{aligned}$$

Thus, the solutions are:

$$\begin{aligned} & \left[\right. \\ & x = \frac{6}{7} \quad \text{and} \quad x = -\frac{6}{7} \\ & \left. \right] \end{aligned}$$

Analyzing the Provided Options

Given the options:

- 13
- 1
- 29
- 42

It's important to compare these options with the solutions $\left(\frac{6}{7}\right)$ and $\left(-\frac{6}{7}\right)$.

Are Any of the Options Correct?

Checking Each Option

- **X = 13:** Does $((13 \times 7)^2 = 36)$?

Calculate:

$$\left[13 \times 7 = 91 \right]$$

$$\left[91^2 = 8,281 \neq 36 \right]$$

So, not correct.

- **X = 1:** Does $((1 \times 7)^2 = 36)$?

Calculate:

$$\left[1 \times 7 = 7 \right]$$

$$\left[7^2 = 49 \neq 36 \right]$$

So, not correct.

- **X = 29:** Does $((29 \times 7)^2 = 36)$?

Calculate:

$$\left[29 \times 7 = 203 \right]$$

$$\left[203^2 = 41,209 \neq 36 \right]$$

So, not correct.

- **X = 42:** Does $((42 \times 7)^2 = 36)$?

Calculate:

$$\left[42 \times 7 = 294 \right]$$

$$\left[294^2 = 86,436 \neq 36 \right]$$

So, not correct.

Since none of these options match the solutions $\left(\frac{6}{7}\right)$ and $\left(-\frac{6}{7}\right)$, it appears there might be a misunderstanding or a typo in the options provided.

Key Takeaways and Clarification

Understanding the Nature of the Solutions

The solutions to $((x \times 7)^2 = 36)$ are not integers but fractions:

$$\begin{aligned} & \left[\right. \\ x &= \pm \frac{6}{7} \\ & \left. \right] \end{aligned}$$

which approximately equal (± 0.857) .

Why the Given Options Do Not Match

The options listed (13, 1, 29, 42) are integers far from the fractional solutions. This indicates that either the options are incorrect or the problem statement has a typo.

How to Approach Similar Problems

1. Isolate the Variable

Always aim to isolate the variable by inverse operations—square roots, division, etc.

2. Consider Both Positive and Negative Roots

When squaring both sides, remember that both positive and negative roots are solutions.

3. Check the Options Carefully

Compare your solutions with the options provided, and verify whether they satisfy the original equation.

4. Recognize When Options Are Not Suitable

If none of the options match your solutions, revisit the problem's statement or consider that the options may be incorrect.

Conclusion: Solving for x in $(x \times 7)^2 = 36$

To summarize:

1. Rewrite the equation as $(7x)^2 = 36$
2. Take the square root of both sides: $|7x| = 6$
3. Solve for x : $x = \pm \frac{6}{7}$
4. Compare these solutions to the options provided.

Given the options 13, 1, 29, and 42, none are correct solutions to the original equation. The actual solutions are approximately ± 0.857 , which are not among the provided options.

Final Advice for Students

When tackling algebraic equations:

- Always carefully interpret the problem and rewrite it if needed.
- Use inverse operations systematically.
- Remember to consider all solutions, including negative roots.
- Verify solutions by substituting them back into the original equation.
- Be cautious of options that do not match your solutions—this might indicate a typo or misstatement.

Understanding these principles will improve your problem-solving skills and prepare you for more complex algebraic challenges.

If you have further questions about solving equations or algebraic concepts, don't hesitate to ask for help. Practice makes perfect, and mastering these fundamental steps will significantly boost your confidence in math!

Frequently Asked Questions

What is the value of x in the equation $(x + 7)^2 = 36$?

The possible values of x are $x = -13$ and $x = 1$.

Why are there two solutions for x in the equation $(x + 7)^2 = 36$?

Because squaring a number yields the same result for both positive and negative roots, so $(x + 7) = 6$ or -6 .

How do I solve $(x + 7)^2 = 36$ for x ?

Take the square root of both sides to get $x + 7 = \pm 6$, then subtract 7 from both to find x .

Which of the options given (13, 1, 29, 42) is a solution for x in the equation?

$x = 1$ is a solution because substituting back: $(1 + 7)^2 = 8^2 = 64$, which does not satisfy the original equation, so none of these options are correct. The correct solutions are $x = -13$ and $x = 1$.

Is $x = 13$ a solution to $(x + 7)^2 = 36$?

No, because $(13 + 7)^2 = 20^2 = 400$, which does not equal 36.

Is $x = 29$ a valid solution for the equation?

No, because $(29 + 7)^2 = 36^2 = 1296$, not 36.

Can $x = 42$ be a solution to the given equation?

No, because $(42 + 7)^2 = 49^2 = 2401$, which is not 36.

What are the correct solutions for x in $(x + 7)^2 = 36$?

The correct solutions are $x = -13$ and $x = 1$.

Additional Resources

PLEASE HELP ME Given $(x \ 7)^2 = 36$, Select The Values Of X: A Mathematical Investigation

Mathematics has long served as the universal language of logic, problem-solving, and critical thinking. From elementary arithmetic to advanced calculus, the discipline offers tools to decode the complexities of both abstract concepts and real-world phenomena. Yet, even in its most fundamental forms, mathematics can sometimes present puzzles that challenge our understanding and require careful analysis. One such problem is the question: "Given $(x \ 7)^2 = 36$, select the values of x from the options: 13, 1, 29, 42." This seemingly straightforward algebraic problem invites a deeper exploration into the principles of algebra, the importance of precise notation, and the methodology for solving quadratic equations.

In this comprehensive review, we will dissect the problem statement, interpret its mathematical meaning, analyze the solution process, and scrutinize the provided options to determine the correct values of x . This investigation not only aims to clarify the solution but also emphasizes the significance of precise notation and critical reasoning in mathematical problem-solving.

Understanding the Problem Statement

The initial step in any mathematical investigation is to interpret the problem accurately. The given problem is:

"Given $(x \ 7)^2 = 36$, select the values of x from: 13, 1, 29, 42."

At first glance, the notation $(x \ 7)^2$ appears unconventional. Typically, algebraic expressions involving a variable x and a constant are written with clear operators, such as addition (+), subtraction (−), multiplication ($\times$ or $\cdot$), or division ($\div$ or $/$). The absence of an explicit operator between x and 7 raises ambiguity—does $(x \ 7)$ represent the product of x and 7, or is it a different operation?

Common Interpretations

1. Product interpretation:

If $(x \ 7)$ means x multiplied by 7, then the expression becomes:

$$\sqrt{(x \times 7)^2 = 36}$$

2. Concatenation or other operations:

If $(x \ 7)$ indicates a concatenation (e.g., "x7" as a two-digit number), then the expression could be read as:

$$\sqrt{(x7)^2 = 36}$$

where $x7$ is a two-digit number with digits x and 7, and x is a digit from 0 to 9.

3. Typographical or notation error:

The notation might be incomplete or a typo, intending to express $(x + 7)$ or $(x - 7)$, which are common in algebra.

Given the options for x are 13, 1, 29, and 42, and considering typical algebraic contexts, the most plausible interpretation is the product interpretation:

$$\sqrt{(x \times 7)^2 = 36}$$

Interpreting " $(x \ 7)^2 = 36$ ": The Most Probable Meaning

Given the options for x , the interpretation that makes the most sense is:

$$(x \times 7)^2 = 36$$

This is because:

- The options include numbers greater than 7, such as 13, 29, and 42, which could logically be solutions for x .
- The structure resembles a common algebraic equation: $(\text{expression})^2 = \text{constant}$.

Clarifying the Equation

Assuming the above, the equation becomes:

$$\sqrt{(7x)^2 = 36}$$

which simplifies to:

$$\sqrt{49x^2 = 36}$$

Solving the Equation

Now, let's proceed step-by-step with the assumption that the original problem is:

"Given $(7x)^2 = 36$, select the values of x ."

Step 1: Isolate x^2

Divide both sides of the equation by 49:

$$\begin{aligned} & \sqrt{\frac{36}{49}} \\ x^2 &= \frac{36}{49} \end{aligned}$$

Step 2: Take the square root of both sides

Recall that:

$$\begin{aligned} & \sqrt{\frac{36}{49}} = \pm \frac{\sqrt{36}}{\sqrt{49}} = \pm \frac{6}{7} \\ x &= \pm \frac{6}{7} \end{aligned}$$

Thus, the solutions are:

$$\begin{aligned} & \sqrt{\frac{36}{49}} \\ x &= \pm \frac{6}{7} \end{aligned}$$

which is approximately:

$$\begin{aligned} & \sqrt{\frac{36}{49}} \\ x &\approx \pm 0.857 \end{aligned}$$

Matching Solutions to Provided Options

Given the solutions, $x \approx 0.857$ or $x \approx -0.857$, none of which are among the options: 13, 1, 29, 42.

However, notice that $x = 1$ is close to 0.857, and the options include 1.

Reconsidering the Options

- Option 1: $x = 13$
- Option 2: $x = 1$
- Option 3: $x = 29$
- Option 4: $x = 42$

Since the solutions are approximately ± 0.857 , none of these options exactly match.

Alternative Interpretation: The Concatenation ($x7$)

Given the options include numbers like 13, 29, and 42, which resemble two-digit numbers, perhaps the original notation $(x7)$ meant concatenation of x and 7.

In this case, $(x7)$ represents a two-digit number with digits x and 7. For example:

- If $x = 1$, then the number is 17
- If $x = 2$, then 27
- If $x = 3$, then 37
- etc.

The equation becomes:

$$\sqrt{(\text{the number formed by concatenating } x \text{ and } 7)^2} = 36$$

Expressed mathematically:

$$\begin{aligned} & \backslash[\\ & (10x + 7)^2 = 36 \\ & \backslash] \end{aligned}$$

Now, solve for x:

$$\begin{aligned} & \backslash[\\ & (10x + 7)^2 = 36 \\ & \backslash] \end{aligned}$$

Take the square root:

$$\begin{aligned} & \backslash[\\ & 10x + 7 = \pm 6 \\ & \backslash] \end{aligned}$$

Solve for x in both cases:

Case 1:

$$\begin{aligned} & \backslash[\\ & 10x + 7 = 6 \implies 10x = -1 \implies x = -\frac{1}{10} = -0.1 \\ & \backslash] \end{aligned}$$

Case 2:

$$\begin{aligned} & \backslash[\\ & 10x + 7 = -6 \implies 10x = -13 \implies x = -\frac{13}{10} = -1.3 \\ & \backslash] \end{aligned}$$

Neither of these solutions align with the options.

Alternative Interpretation: The Expression "(x 7)" as a Misprint or Different Operation

Given the ambiguity, perhaps the problem is a typo or misprint for:

- $(x + 7)^2 = 36$, or
- $(x - 7)^2 = 36$

Let's test these.

Testing $(x + 7)^2 = 36$

$$\begin{aligned} &\backslash[\\ &x + 7 = \pm 6 \\ &\backslash] \end{aligned}$$

which yields:

- $(x + 7 = 6 \rightarrow x = -1)$
- $(x + 7 = -6 \rightarrow x = -13)$

Neither of these options match the provided options.

Testing $(x - 7)^2 = 36$

$$\begin{aligned} &\backslash[\\ &x - 7 = \pm 6 \\ &\backslash] \end{aligned}$$

which yields:

- $(x - 7 = 6 \rightarrow x = 13)$
- $(x - 7 = -6 \rightarrow x = 1)$

Now, these solutions are:

- $(x = 13)$
- $(x = 1)$

which exactly match two of the options provided: 13 and 1.

Conclusion: The Most Plausible Solution

Given the options and the calculations, the interpretation that fits best is:

$$\sqrt{(x - 7)^2} = 36$$

which yields solutions:

$$x = 13 \quad \text{or} \quad x = 1$$

thus matching $x = 13$ and $x = 1$.

Final Selection and Explanation

Considering the options:

- 13
- 1
- 29
- 42

and the solutions derived from the plausible interpretation, the correct values of x are 13 and 1.

Therefore, the correct choices are:

- $x = 13$
- $x = 1$

Implications and Broader Lessons

This investigation underscores several critical points for mathematical problem-solving:

Importance of Clear Notation

Ambiguity in notation can lead to multiple interpretations, which may cause confusion or miscalculations. Precise notation, such as explicitly stating "+", "-", "×", or other operations, is essential.

Critical Reasoning and Assumption Testing

When faced with ambiguous problems, testing various plausible interpretations helps identify consistent solutions. In this case, considering the possibility that the problem involves $((x - 7)^2)$

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