Solving Quadratic Equations with Factoring - Example 5

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$

$-1 \cdot (-1) = 1$

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$ but $1 + 1 = 2 \neq 4$

$-1 \cdot (-1) = 1$ but $-1 + (-1) = -2 \neq 4$

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$ but $1 + 1 = 2 \neq 4$

$-1 \cdot (-1) = 1$ but $-1 + (-1) = -2 \neq 4$

Uh oh! Neither of these work!

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$ but $1 + 1 = 2 \neq 4$

$-1 \cdot (-1) = 1$ but $-1 + (-1) = -2 \neq 4$

Uh oh! Neither of these work!

Does this mean that there are no factors? No solutions?

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$ but $1 + 1 = 2 \neq 4$

$-1 \cdot (-1) = 1$ but $-1 + (-1) = -2 \neq 4$

Uh oh! Neither of these work!

Does this mean that there are no factors? No solutions?

No, it just means we can't find them in this way.

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$ but $1 + 1 = 2 \neq 4$

$-1 \cdot (-1) = 1$ but $-1 + (-1) = -2 \neq 4$

Uh oh! Neither of these work!

Does this mean that there are no factors? No solutions?

No, it just means we can't find them in this way.

The issue is that this method only considers integers when finding numbers that are factors of 1, but there are others (like $2 \cdot \frac{1}{2} = 1$)

Solving Quadratic Equations with Factoring - Example 5

Example: Find solutions to:

$$x^2 + 4x + 1 = 0$$

As we've been doing, our only way to solve this is to factor $x^2 + 4x + 1$

So, we want to write $x^2 + 4x + 1$ in factored form:

$$x^2 + 4x + 1 = (x + s) \cdot (x + t)$$

Factors of 1 are:

$1 \cdot 1 = 1$ but $1 + 1 = 2 \neq 4$

$-1 \cdot (-1) = 1$ but $-1 + (-1) = -2 \neq 4$

Uh oh! Neither of these work!

Does this mean that there are no factors? No solutions?

No, it just means we can't find them in this way.

The issue is that this method only considers integers when finding numbers that are factors of 1, but there are others (like $2 \cdot \frac{1}{2} = 1$)

So, we need to learn new methods to find solutions that are not integers.