

Answer on Question#54579 – Math – Algebra

Solve the equation. Then determine whether the equation is an identity, a conditional, or an inconsistent equation

$$5x/x-2= 10/x-2 + 3$$

What is the solution?

Solution:

$$\frac{5x}{x-2} = \frac{10}{x-2} + 3$$

- to make it easier we multiply all terms by (x-2)

$$5x = 10 + 3(x - 2)$$

- distribute

$$5x = 10 + 3x - 6$$

- combine like terms on the right side of the equation

$$5x = 4 + 3x$$

- add (-3x) to the both sides of the equation

$$5x - 3x = 4 + 3x - 3x$$

- combine like terms on the both sides of the equation

$$2x = 4$$

- divide both sides of the equation by 2

$$x = 2$$

Verification: if x=2

$$\frac{5 * 2}{2 - 2} = \frac{10}{2 - 2} + 3$$

We can't use it as a solution, because we get division by zero. However, this is the only possible answer. That means that this equation has no solution.

Inconsistent equation has no solution.

Identity equation – an equation that is satisfied by every real number.

Conditional equation – an equation that is satisfied by at least 1 real number (but not an identity).

In our case, equation has no solution for X, so it is an inconsistent equation.

Answer: That is an inconsistent equation.