

Solving complex equations in the simplest way possible

$$\text{Solve } \frac{1 - 7X}{X + 2} = \frac{5 - 7X}{X}$$

People apply different approaches to solve an equation like this one but the one am using here is the simplest way to solve such a question.

First Step

Just use the cross multiply approach. What that means is you are going to multiply the numerator of the first part of the question by the denominator of the second part of the question and multiply the numerator of the second part of the equation by the denominator of the first part of the equation.

That becomes

$$(1 - 7X)(X) = (5 - 7X)(X + 2)$$

Now you multiply and simplify

$$X^2 - 7X^2 = 5X + 10 - 7X^2 - 14X$$

$$X^2 - 7X^2 = 5X - 14X + 10 - 7X^2$$

Now you set the equation to equal to zero. To do that we are going to inverse the signs of all the numbers of the equation to the right.

$$X^2 - 7X^2 - 5X + 14X - 10 + 7X^2 = 0 \quad \text{that becomes} \quad X^2 - 5X + 14X - 10 - 7X^2 + 7X^2 = 0$$

$$10X - 10 = 0$$

$$10X = 0 + 10$$

$$10X = 10$$

$$X = \frac{10}{10}$$

$$X = 1$$

Since when you multiply 10 by x the product is 10 to get X, you simply divide the product by the other number unlike the other complicated approaches. Hope this helps.