Math 1513 - College Algebra

Quiz #7 - 2018.09.10

Solutions

Solve the following equation:

$$-3 + \frac{4}{x+3} = 2x + 5$$

Just in case you need it, the quadratic formula is given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

First we take our original equation and multiply both sides by $x + 3$ to get rid of the denominator.

$$-3(x+3) + 4 = (2x+5)(x+3)$$

Expanding both sides to get rid of parentheses gives

$$-3x - 9 + 4 = 2x^2 + 6x + 5x + 15$$

and simplifying:

$$-3x - 5 = 2x^2 + 11x + 15$$

Next we move everything to one side:

$$2x^2 + 14x + 20 = 0$$

We can now factor, or we can divide by 2 first to simplify things (which is what we will do):

$$x^2 + 7x + 10 = 0$$

Applying the quadratic formula here, yields $x = -5$ and $x = -2$. Note, we could have factored first as well:

$$x^2 + 7x + 10 = (x+5)(x+2)$$