

Find all real solutions of the equation  $(x^2 - 5x + 5)^{x^2 - 11x + 30} = 1$ .

There are six possible solutions to the equation - did you find all six?

Here are some more questions to think about

1. Find all the solutions to  $(x^2 - 7x + 11)^{x^2 - 13x + 42} = 1$ .  
How do these solutions compare to the first equation?
2. Can you find a Mega Quadratic Equation with solutions 3,4,5,6,7,8?  
How about 4,5,6,7,8,9?...
3. Can you explain why there are only 4 solutions to  
 $(x^2 - 5x + 5)^{x^2 - 4} = 1$ ?
4. Can you explain why there are only 3 solutions to  
 $(x^2 - 6x + 10)^{x^2 + x - 2} = 1$ ?
5. Can you find a Mega Quadratic equation with exactly 2 solutions? 5 solutions?