**4.2 – FACTORING QUADRATIC EQUATIONS**

To solve quadratic equations algebraically, the methods we used to use for linear equations can’t work… Indeed, you can’t isolate “*x*” … ex:

We need to find another way…

An important use for factoring is to determine zeros of an expression. Indeed, a product can only be zero if one of its factors is zero…

Example 1: Solve   
  
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Example 2: Solve   
  
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METHOD: To solve an equation by factoring, you need to write all the terms on the same side of the “=”, factor the expression in order to find all the possible zeros.

Example: Solve algebraically by factoring   
  
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Unfortunately, some expressions will be harder to factor than the ones seen in grade 10…

EXPLORATION… Factor

ADDITIONAL METHODS TO FACTOR: **Change of Variables**

Example 1:

Example 2:

Your turn: a) p 222

Example 3 :

Your turn : b) p 222

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ADDITIONAL METHODS TO FACTOR: **use a zero…**

Property: If is a zero of an expression, then the expression can be factored by

Application : Show that can be factored by .  
  
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Examples : a) Is a factor of ?  
  
  
  
  
 b) Is a factor of ?  
  
  
  
  
 c) Is a factor of ?

Note: It is possible to find the missing factor by looking at how we expand products…   
  
  
  
  
  
  
  
  
Your turn: Same questions with:

1. 7) and
2. and
3. and

Note: To find zeros of an expression, we can look at the table of values of our graphing calculator…   
 Therefore, by looking at the table of values on our calculator, we can determine some factors…   
  
Example: factor and using graphing technology.  
  
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