

# WebWorkSet: AC-Method

#1)  $x^2 + 17x + 72$

↑  
sum

↑  
product

Two values whose sum = 17 +  
product = 72 are 9 and 8.

Replace the term  $17x$  by  $9x + 8x$

to get:  $(x^2 + 9x) + (8x + 72)$  \*\*  
ww

now factor by

grouping

$$x(x + 9) + 8(x + 9)$$

$$(x + 9)(x + 8)$$

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## WW set: AC-method

#7)  $2x^2 - 7x - 4$

← sum

product  $2 \cdot (-4)$

Look for 2 values whose product is  $2 \cdot (-4) = -8$  and whose sum is  $-7$ .

Try  $-8$  and  $+1$  ✓

Rewrite  $2x^2 - 7x - 4$  using  $-8x$  and  $+1x$  to replace the term  $-7x$ .  
Then factor by grouping.

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## Lesson 7: Solving Polynomial Equation Using the Zero-Product Property

Recall: A quadratic equation is an equation that can be written in the form:  $ax^2 + bx + c = 0$

Where  $a, b$  &  $c$  are real numbers

and  $a \neq 0$ .

(Side note: If  $a$  is  $= 0$  Then we get a linear equation.)

$ax^2 + bx + c = 0$  is written in standard form.

The Zero-Product Property:

If  $a$  and  $b$  are real numbers and  $ab = 0$  Then  $a = 0$  or  $b = 0$  (or both).

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Use This to solve:

$$(x-3)(x+1) = 0$$

$$\begin{array}{r} x-3=0 \\ +3 \quad +3 \\ \hline \end{array}$$

$$\boxed{x=3}$$

$$\begin{array}{r} x+1=0 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\boxed{x=-1}$$

The solution set =  $\{-1, 3\}$

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Solve:  $(x-5)(2x+7)=0$   
 $x=5, x=-7/2$

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Solve:  $x^2 - 9x - 22 = 0$   
sum product

$(x+2)(x-11)=0$   
 $x=-2, x=11$

Solve:  $x(5x-2)=0$

$x=0$        $5x-2=0$   
 $+2 \quad +2$   
 $\frac{5x}{5} = \frac{2}{5}$        $x = \frac{2}{5}$

Solve:  $4x^2 - 28x = -49$

To factor  $4x^2 - 28x + 49 = 0$

use

$a^2 - 2ab + b^2 = (a-b)^2$   
 $a^2 + 2ab + b^2 = (a+b)^2$

perfect square trinomial

What is  $a = 2x$

$b = 7$

$$4x^2 - 28x + 49 = (2x - 7)^2 = 0$$

solve it!

$$(2x - 7)(2x - 7) = 0$$

$$2x - 7 = 0$$

$$x = 7/2$$

$$2x - 7 = 0$$

$$x = 7/2$$

This is  
called a  
"double  
root"