

April 5, 2016

6.2 → Zero Product Property

$ab = 0$

- ① $a = 0$
- ② $b = 0$
- ③ $a \neq b = 0$

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Equations

<u>Linear</u> (a line)	<u>non-Linear</u> (a curve, not a line)
$2x + 4 = 8$ $y = 3x - 9$ $f(x) = -5x + 6$ $y = x$	$x^2 = 8x$ $(x-9)(x+3) = 0$ $x^2 + 3x - 9x - 27 = 0$ $x^2 - 6x - 27 = 0$

* All linear equations are degree 1

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$x^2 = 8x$ Solve for x

- ① Set the equation equal to zero.
 $x^2 - 8x = 0$
- ② Factor
 $x(x-8) = 0$
- ③ Solve using our Zero Product Property
 - ① $x = 0$
 - ② $x - 8 = 0$
 $x = 8$

Two solutions because it is a degree two polynomial.
- ④ Check

$x = 0 \rightarrow x^2 = 8x$	$x = 8$
$(0)^2 = 8(0)$	$(8)^2 = 8(8)$
$0 = 0 \checkmark$	$64 = 64 \checkmark$

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$(x-9)(x+3) = 0$

- ① $x - 9 = 0$
 $x = 9$
- ② $x + 3 = 0$
 $x = -3$

OK

$x = 9$	$x = -3$
$(9-9)(9+3) = 0$	$(-3-9)(-3+3) = 0$
$0 \cdot 12 = 0$	$(-12) \cdot 0 = 0$
$0 = 0 \checkmark$	$0 = 0 \checkmark$

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Do 6.2 #1-#48 m3

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6.3 Factoring Trinomials of the form

$[a]x^2 + [b]x + [c]$, where $a=1$

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$$\begin{array}{c}
 \begin{array}{c} \text{F} \quad \text{O} \\ \text{I} \quad \text{L} \end{array} \\
 (\chi + b)(\chi + 4) \\
 \chi^2 + 4\chi + 6\chi + 24 \\
 \text{F} \quad \text{O} \quad \text{I} \quad \text{L} \\
 \text{Collect} \\
 \chi^2 + 10\chi + 24, \text{ note: } a=1
 \end{array}$$

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$$\begin{array}{c}
 \chi^2 + 10\chi + 24 \\
 \textcircled{1} \text{ a.c. \& l.r. method} \\
 \textcircled{2} \text{ Guess \& Check Method} \\
 \text{a.c. \& l.r. Method Steps} \\
 \textcircled{1} \text{ Factor out HCF} \\
 \textcircled{2} \text{ Identify a, c, l.r.} \\
 a=1 \\
 c=+24 \\
 l.r.=+10 \\
 \textcircled{3} a \cdot c = \text{Product} = 1 \cdot 24 = 24 \\
 b = \text{Sum} = 10 \\
 \textcircled{4} \text{ Set up the following} \\
 \begin{array}{r|rr}
 + & + & + \\
 2 & 12 & \checkmark \\
 3 & 8 & \checkmark \\
 5 & 5 & \times \\
 4 & 6 & \checkmark
 \end{array} \\
 \textcircled{5} \text{ Write the Sum with two found numbers as a 4 term polynomial} \\
 \chi^2 + 4\chi + 6\chi + 24 \\
 \textcircled{6} \text{ Factor by Grouping} \\
 \chi(\chi + 4) + 6(\chi + 4) \\
 \textcircled{7} \text{ Factor out Common HCF} \\
 (\chi + 4)(\chi + 6)
 \end{array}$$

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