8.5 Factoring Polynomials of the Form $x^2 + bx + c$

Steps for factoring:
1. Find factors of **c** that add to **b.**
2. Create factor groups (x ± __) (x ± __).
3. Check by FOIL.

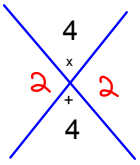
Note: You can use your calculator to find factors of c.
1. y = c/x
2. TABLE (2ND GRAPH)

Dec 2-7:00 PM

Factor.

$x^2 + 4x + 4$

$(x + 2)(x + 2)$



Check FOIL

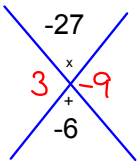
$x^2 + 2x + 2x + 4$

$x^2 + 4x + 4$

May 3-6:57 AM

$x^2 - 6x - 27$

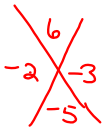
$(x + 3)(x - 9)$



Apr 22-7:22 AM

$x^2 - 5x + 6$

$(x - 2)(x - 3)$



Dec 2-7:35 PM

$x^2 + 7x - 18$

$(x - 2)(x + 9)$

Nov 11-1:54 PM

$x^2 + 6xy - 55y^2$

$(x + 11y)(x - 5y)$

Nov 16-1:06 PM

$a^2 - 12ab + 32b^2$

$(a - 8b)(a - 4b)$

32
−8 −4
−12

Nov 16-1:07 PM

ZERO-PRODUCT PROPERTY:
If $(x + a)(x + b) = 0$,
then $x + a = 0$ or $x + b = 0$.

Example: $(x + 3)(x - 2) = 0$

$x+3=0$ or $x-2=0$
$-3\ -3$ $+2\ +2$

$x = -3$ or $x = 2$

Nov 11-8:18 AM

$(4x - 1)(x + 2) = 0$

$4x-1=0$ or $x+2=0$
$+1\ +1$ $-2\ -2$

$\frac{4x}{4} = \frac{1}{4}$ $x = -2$

$x = \frac{1}{4}$ or -2

May 2-12:36 PM

Most of the time you will have to factor first.

$x^2 - 3x - 4 = 0$

$(x + 1)(x - 4) = 0$

$x+1=0$ or $x-4=0$
$-1\ -1$ $+4\ +4$

$x = -1$ or 4

−4
1 −4
−3

Nov 30-12:48 PM

$x^2 + 6x + 8 = 0$

$(x + 2)(x + 4) = 0$

$x+2=0$ or $x+4=0$
$-2\ -2$ $-4\ -4$

$x = -2$ or -4

8
2 4
6

May 2-12:38 PM

Set equation equal to **0** first.

$x^2 + 14x = -49$
$+49\ +49$

$x^2 + 14x + 49 = 0$

$(x + 7)(x + 7) = 0$

$x+7=0$
$-7\ -7$

$x = -7$

49
7 7
14

Nov 30-1:03 PM

$x^2 - 5x = 50$

$-50 \quad -50$

$x^2 - 5x - 50 = 0$

$(x+5)(x-10) = 0$

$x+5 = 0$ or $x-10 = 0$

$-5 \quad -5 \qquad +10 \quad +10$

$x = -5$ or 10

Nov 25-4:23 PM

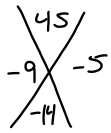
Finding zeros means the y-value is zero.

Find the zeros of the polynomial function.

$g(x) = x^2 - 14x + 45$

$0 = x^2 - 14x + 45$

$0 = (x-9)(x-5)$



$x-9 = 0$ or $x-5 = 0$

$x = 9$ or 5

Apr 21-3:53 PM

Classwork: **p.528 #4-38 even 48,50**

Final Five

What is the factored form of **$x^2 + x - 42$**?

a) $(x - 7)(x - 6)$ b) $(x - 7)(x + 6)$

c) $(x + 7)(x - 6)$ d) $(x + 7)(x + 6)$

Nov 16-1:08 PM