15.1/15.2 Add, Subtract, and Multiply Polynomials

Ex #1 $(x^2 + 6x - 10) - (4x^3 + 7x - 8)$

$= x^2 + 6x - 10 - 4x^3 - 7x + 8$

$= \boxed{-4x^3 + x^2 - x - 2}$

Ex #2 $(3x^2 - 2x) + (x^2 - 7x + 11)$

$= 3x^2 - 2x + x^2 - 7x + 11 = \boxed{4x^2 - 9x + 11}$

Ex #3 $(5x^3 + 2x - 1 + 4x^2) + (6 - 5x + x^3) - (2x^2 + 5)$

$= 5x^3 + 2x - 1 + 4x^2 + 6 - 5x + x^3 - 2x^2 - 5$

$= \boxed{6x^3 + 2x^2 - 3x}$

Ex #4 $(6x - 2)(x^2 + 7x - 8)$

	x^2	$+7x$	-8
$6x$	$6x^3$	$42x^2$	$-48x$
-2	$-2x^2$	$-14x$	$+16$

$= \boxed{6x^3 + 40x^2 - 62x + 16}$

Ex #5 $(3x^2 - 2x + 1)(x^2 + x - 4)$

	x^2	$+x$	-4
$3x^2$	$3x^4$	$3x^3$	$-12x^2$
$-2x$	$-2x^3$	$-2x^2$	$+8x$
$+1$	$+x^2$	$+x$	-4

$= \boxed{3x^4 + x^3 - 13x^2 + 9x - 4}$

Ex #6 An open-topped box is created by cutting squares of side length x off the corners of a 10 x 8 inch paper & folding the sides up.

a) Write V(x), the function for volume of the box & write it in standard form.

Volume $_{BOX}$ = (length)(width)(height)

$V(x) = (10 - 2x)(8 - 2x) \, x$

$V(x) = (4x^2 - 36x + 80) \, x$

$\boxed{V(x) = 4x^3 - 36x^2 + 80x}$

	$8 - 2x$	
10	80	$-20x$
$-2x$	$-16x$	$+4x^2$