Expanding Brackets - Lesson 3

Expanding a Binomial with a Quadratic Trinomial

LI

• Expand brackets of the form $(a x + b) (c x^2 + d x + e)$.

<u>SC</u>

• Collect like terms together.

Reminders

$$2 \times x = 2 \times$$

$$\mathbf{x} \mathbf{x} \mathbf{x} = \mathbf{x}^2$$

$$x x x^{2} = x^{3}$$

$$+ ve x + ve = + ve$$

$$+ ve x - ve = - ve$$

$$- ve x - ve = + ve$$

Example 1

Expand $(x + 4)(x^2 - 5x + 3)$.

Method 1 (Standard)

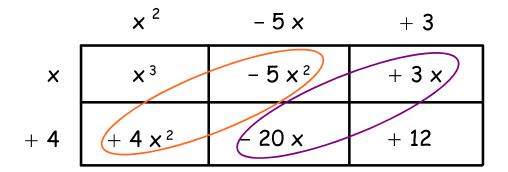
$$(x + 4) (x^{2} - 5x + 3)$$

$$= x^{3} \begin{vmatrix} -5x^{2} \end{vmatrix} + 3x \begin{vmatrix} +4x^{2} \end{vmatrix} - 20x \begin{vmatrix} +12 \end{vmatrix}$$

$$= x^{3} - x^{2} - 17x + 12$$

Method 2 (Grid)

Expand
$$(x + 4)(x^2 - 5x + 3)$$
.



Example 2

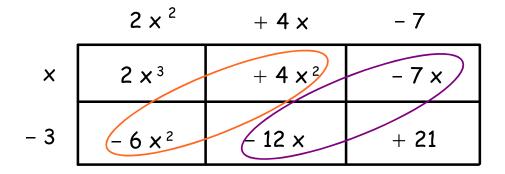
Expand $(x - 3)(2x^2 + 4x - 7)$.

Method 1 (Standard)

$$= 2 x^3 - 2 x^2 - 19 x + 21$$

Method 2 (Grid)

Expand
$$(x - 3)(2x^2 + 4x - 7)$$
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Expanding a Pair of Brackets (Linear Binomial with Quadratic Trinomial).notebook une 28, 2017

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    Expand and simplify.
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a
$$(x+1)(3x^2+2x+7)$$
 b $(y+4)(2y^2-5y+2)$ **c** $(x+3)(5x^2-x-1)$

d
$$(t-2)(3t^2+6t-1)$$
 e $(w-5)(w^2-4w-2)$ **f** $(5+a)(4a^2-2a+5)$

2 Expand and simplify.

a
$$(3x-2)(4x^2+3x+1)$$
 b $(6y+1)(2y^2-3y-2)$ **c** $(7a+4)(2a^2-5a+3)$

d
$$(4w-5)(w^2-3w+4)$$
 e $(8b-7)(2b^2+7b+9)$ **f** $(6x^2+2x-3)(5x-1)$

3 Expand and simplify.

a
$$(x+7)(2x^2+9x+5)$$
 b $(a-2)(3a^2-7a+4)$ **c** $(6-a)(5a^2+6a-1)$

d
$$(9u+5)(3u^2-8u+7)$$
 e $(b+5)(6b^2-2b+5)$ **f** $(4w^2-5w+3)(8w-1)$

Answers

1 a
$$3x^3 + 5x^2 + 9x + 7$$

b
$$2y^3 + 3y^2 - 18y + 8$$

c
$$5x^3 + 14x^2 - 4x - 3$$

d
$$3t^3 - 13t + 2$$

$$e w^3 - 9w^2 + 18w + 10$$

$$\mathbf{f} \qquad 4a^3 + 18a^2 - 5a + 25$$

2 a
$$12x^3 + x^2 - 3x - 2$$

b
$$12y^3 - 16y^2 - 15y - 2$$

c
$$14a^3 - 27a^2 + a + 12$$

$$\mathbf{d} \qquad 4w^3 - 17w^2 + 31w - 20$$

e
$$16b^3 + 42b^2 + 23b - 63$$

f $30x^3 + 4x^2 - 17x + 3$

3 a
$$2x^3 + 23x^2 + 68x + 35$$

b
$$3a^3 - 13a^2 + 18a - 8$$

$$c -5a^3 + 24a^2 + 37a - 6$$

d
$$27u^3 - 57u^2 + 23u + 35$$

$$e 6b^3 + 28b^2 - 5b + 25$$

$$f = 32w^3 - 44w^2 + 29w - 3$$