

## L5 Multiplying Polynomials

To multiply by hand we use the distributive property where every term in the first polynomial is multiplied by every term in the second. Then combine like terms.

Eg  $3x(x-2)$   $3x^2 - 6x$

Eg  $4x^3(-8x+7)$   $-32x^4 + 28x^3$

Eg  $-2x^3(3x^2-3x+2)$   $-6x^5 + 6x^4 - 4x^3$

Eg  $7ab^3(4a^2-5b^2)$   $28a^3b^3 - 35ab^5$

Simplify each

Eg  $5(x+3) + 7(x-6)$

$$5x + 15 + 7x - 42$$

$$\boxed{12x - 27}$$

Eg.  $-2x(5x-3) + 4(-3x+9)$

$$-10x^2 + 6x - 12x + 36$$

$$-10x^2 - 6x + 36$$

Eg  $(3x-5)(x-2)$

$$3x^2 - 6x - 5x + 10$$

$$3x^2 - 11x + 10$$

Eg  $(4x-3)(-8x+7)$

$$-32x^2 + 28x + 24x - 21$$

$$-32x^2 + 52x - 21$$

Eg  $(2x-5)^2$

$$(2x-5)(2x-5)$$

$$4x^2 - 10x - 10x + 25$$

$$4x^2 - 20x + 25$$

Eg  $(-2x+5)(3x^2-3x+2)$

$$-6x^3 + 6x^2 - 4x + 15x^2 - 15x + 10$$

$$-6x^3 + 21x^2 - 19x + 10$$

Eg  $(3x^2+4x-2)(4x^2-5x+9)$

$$12x^4 - 15x^3 + 27x^2 + 16x^3 - 20x^2 + 36x - 8x^2 + 10x - 18$$

$$12x^4 + x^3 - x^2 + 46x - 18$$