Example: $(4x+7y)(9x^2-12xy-4y^2)$

$=(4x+7y)\ (9x^2)+(4x+7y)\ (-12xy)+(4x+7y)(-4y^2)$

$=(4x)(9x^2)+(7y)(9x^2)+(4x)(-12xy)+(7y)(-12xy)+(4x)(-4y^2)+(7y)(-4y^2)$

$=36x^3+63x^2y-48x^2y-84xy^2-16xy^2-28y^3$

$=36x^3+15x^2y-100xy^2-28y^3$

Example: $(3x-5)^2=(3x-5)(3x-5)$

$=(3x)(3x-5)+(-5)(3x-5)$

$=9x^2-15x-15x+25$

$=9x^2-30x+25$

Example: $(3x-5)^3=(3x-5)(3x-5)^2$

We make use of the answer from the previous problem:

$=(3x-5)(9x^2-30x+25)$

$=(3x)(9x^2-30x+25)+(-5)(9x^2-30x+25)$

$=(3x)(9x^2)+(3x)(-30x)+(3x)(25)+(-5)(9x^2)+(-5)(-30x)+(-5)(25)$

$=27x^3-90x^2+75x-45x^2+150x-125$

$=27x^3-135x^2+225x-125$