CORRIGE – M. QUET

EXERCICE 1 $(a+b)^2 = a^2 + 2ab + b^2$

Exemple :

$A = 101^2$
$A = (100 + 1)^2$
$A = 100^2 + 200 + 1$
$A = 10\,000 + 200 + 1$
$A = 10\,201$

$B = 102^2$
$B = (100 + 2)^2$
$B = 100^2 + 2\times100\times2 + 2^2$
$B = 10\,000 + 400 + 4$
$B = 10\,404$

$C = 51^2$
$C = (50 + 1)^2$
$C = 50^2 + 2\times50\times1 + 1^2$
$C = 2\,500 + 100 + 1$
$C = 2\,601$

$D = 1\,005^2$
$D = (1000 + 5)^2$
$D = 1000^2 + 2\times1000\times5 + 5^2$
$D = 1\,000\,000 + 10\,000 + 25$
$D = 1\,010\,025$

$E = 201^2$
$E = (200 + 1)^2$
$E = 200^2 + 2\times200\times1 + 1^2$
$E = 40\,000 + 400 + 1$
$E = 40\,401$

$F = 109^2$
$F = (100 + 9)^2$
$F = 100^2 + 2\times100\times9 + 9^2$
$F = 10\,000 + 1\,800 + 81$
$F = 11\,881$

EXERCICE 2 $(a-b)^2 = a^2 - 2ab + b^2$

Exemple :

$A = 99^2$
$A = (100 - 1)^2$
$A = 100^2 - 200 + 1$
$A = 10\,000 - 200 + 1$
$A = 9\,801$

$B = 98^2$
$B = (100 - 2)^2$
$B = 100^2 - 2\times100\times2 + 2^2$
$B = 10\,000 - 400 + 4$
$B = 9\,604$

$C = 49^2$
$C = (50 - 1)^2$
$C = 50^2 - 2\times50\times1 + 1^2$
$C = 2\,500 - 100 + 1$
$C = 2\,401$

$D = 990^2$
$D = (1\,000 - 10)^2$
$D = 1000^2 - 2\times1000\times10 + 10^2$
$D = 1\,000\,000 - 20\,000 + 100$
$D = 980\,100$

$E = 199^2$
$E = (200 - 1)^2$
$E = 200^2 - 2\times200\times1 + 1^2$
$E = 40\,000 - 400 + 1$
$E = 39\,601$

$F = 91^2$
$F = (100 - 9)^2$
$F = 100^2 - 2\times100\times9 + 9^2$
$F = 10\,000 - 1\,800 + 81$
$F = 8\,281$

EXERCICE 3 $(a+b)(a-b) = a^2 - b^2$

Exemple :

$A = 101 \times 99$
$A = (100 + 1)(100 - 1)$
$A = 100^2 - 1^2$
$A = 10\,000 - 1$
$A = 9\,999$

$B = 105 \times 95$
$B = (100 + 5)(100 - 5)$
$B = 100^2 - 5^2$
$B = 10\,000 - 25$
$B = 9\,975$

$C = 51 \times 49$
$C = (50 + 1)(50 - 1)$
$C = 50^2 - 1^2$
$C = 2\,500 - 1$
$C = 2\,499$

$D = 107 \times 93$
$D = (100 + 7)(100 - 7)$
$D = 100^2 - 7^2$
$D = 10\,000 - 49$
$D = 9\,951$

$E = 498 \times 502$
$E = (500 + 2)(500 - 2)$
$E = 500^2 - 2^2$
$E = 250\,000 - 4$
$E = 249\,996$

$F = 1\,007 \times 993$
$F = (1\,000 + 7)(1\,000 - 7)$
$F = 1\,000^2 - 7^2$
$F = 1\,000\,000 - 49$
$F = 999\,951$

EXERCICE 4 $a^2 - b^2 = (a+b)(a-b)$

Exemple :

$A = 101^2 - 99^2$
$A = (101+99)(101-99)$
$A = 200 \times 2$
$A = 400$

$B = 105^2 - 95^2$
$B = (105 + 95)(105 - 95)$
$B = 200 \times 10$
$B = 2\,000$

$C = 235^2 - 234^2$
$C = (235 + 234)(235 - 234)$
$C = 469 \times 1$
$C = 469$

$D = 47^2 - 53^2$
$B = (47 + 53)(47 - 53)$
$B = 100 \times (-6)$
$B = -600$

$E = 9\,876^2 - 9\,875^2$
$E = (9876 + 9875) \times (9876 - 9875)$
$E = 19\,751 \times 1$
$E = 19\,751$

$F = 93^2 - 107^2$
$B = (93 + 107)(93 - 107)$
$B = 200 \times (-14)$
$B = -2\,800$