

CORRIGE – M. QUET

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

Exemple :

$$A = 101^2$$

$$A = (100 + 1)^2$$

$$A = 100^2 + 200 + 1$$

$$A = 10\,000 + 200 + 1$$

$$A = 10\,201$$

$$B = 102^2$$

$$B = (100 + 2)^2$$

$$B = 100^2 + 2 \times 100 \times 2 + 2^2$$

$$B = 10\,000 + 400 + 4$$

$$B = 10\,404$$

$$C = 51^2$$

$$C = (50 + 1)^2$$

$$C = 50^2 + 2 \times 50 \times 1 + 1^2$$

$$C = 2\,500 + 100 + 1$$

$$C = 2\,601$$

$$D = 1\,005^2$$

$$D = (1\,000 + 5)^2$$

$$D = 1\,000^2 + 2 \times 1\,000 \times 5 + 5^2$$

$$D = 1\,000\,000 + 10\,000 + 25$$

$$D = 1\,010\,025$$

$$E = 201^2$$

$$E = (200 + 1)^2$$

$$E = 200^2 + 2 \times 200 \times 1 + 1^2$$

$$E = 40\,000 + 400 + 1$$

$$E = 40\,401$$

$$F = 109^2$$

$$F = (100 + 9)^2$$

$$F = 100^2 + 2 \times 100 \times 9 + 9^2$$

$$F = 10\,000 + 1\,800 + 81$$

$$F = 11\,881$$

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

Exemple :

$$A = 99^2$$

$$A = (100 - 1)^2$$

$$A = 100^2 - 200 + 1$$

$$A = 10\,000 - 200 + 1$$

$$A = 9\,801$$

$$B = 98^2$$

$$B = (100 - 2)^2$$

$$B = 100^2 - 2 \times 100 \times 2 + 2^2$$

$$B = 10\,000 - 400 + 4$$

$$B = 9\,604$$

$$C = 49^2$$

$$C = (50 - 1)^2$$

$$C = 50^2 - 2 \times 50 \times 1 + 1^2$$

$$C = 2\,500 - 100 + 1$$

$$C = 2\,401$$

$$D = 990^2$$

$$D = (1\,000 - 10)^2$$

$$D = 1\,000^2 - 2 \times 1\,000 \times 10 + 10^2$$

$$D = 1\,000\,000 - 20\,000 + 100$$

$$D = 980\,100$$

$$E = 199^2$$

$$E = (200 - 1)^2$$

$$E = 200^2 - 2 \times 200 \times 1 + 1^2$$

$$E = 40\,000 - 400 + 1$$

$$E = 39\,601$$

$$F = 91^2$$

$$F = (100 - 9)^2$$

$$F = 100^2 - 2 \times 100 \times 9 + 9^2$$

$$F = 10\,000 - 1\,800 + 81$$

$$F = 8\,281$$

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 :

$$A = 101^2 - 99^2$$

$$A = (101 + 99)(101 - 99)$$

$$A = 200 \times 2$$

$$A = 400$$

$$B = 105^2 - 95^2$$

$$B = (105 + 95)(105 - 95)$$

$$B = 200 \times 10$$

$$B = 2\,000$$

$$C = 235^2 - 234^2$$

$$C = (235 + 234)(235 - 234)$$

$$C = 469 \times 1$$

$$C = 469$$

$$D = 47^2 - 53^2$$

$$B = (47 + 53)(47 - 53)$$

$$B = 100 \times (-6)$$

$$B = -600$$

$$E = 9\,876^2 - 9\,875^2$$

$$E = (9\,876 + 9\,875) \times$$

$$(9\,876 - 9\,875)$$

$$E = 19\,751 \times 1$$

$$E = 19\,751$$

$$F = 93^2 - 107^2$$

$$B = (93 + 107)(93 - 107)$$

$$B = 200 \times (-14)$$

$$B = -2\,800$$