

Exercice 1

- (2) a) $197^2 = (200 - 3)^2 = 200^2 - 2 \cdot 200 \cdot 3 + 3^2 = 40000 - 1200 + 9 = 38809$
 b) $96 \cdot 104 = (100 - 4)(100 + 4) = 10000 - 16 = 9984$

Exercice 2

- (1) $\left(\frac{5x}{6} - 3y^5\right)^2 = \frac{25x^2}{36} - 5xy^2 + 9y^{10}$
 (2) $\left(\frac{a}{2} + 3b\right) \cdot \left(3b - \frac{a}{2}\right) = \left(3b + \frac{a}{2}\right) \cdot \left(3b - \frac{a}{2}\right) = 9b^2 - \frac{a^2}{4}$
 (3) $(4w - 7y)^2 - (w + 2y)\left(\frac{w}{2} - 3y\right)$
 $= 16w^2 - 56wy + 49y^2 - \left(\frac{w^2}{2} - 3wy + wy - 6y^2\right)$
 $= 16w^2 - 56wy + 49y^2 - \frac{w^2}{2} + 2wy + 6y^2$
 $= \frac{31w^2}{2} - 54wy + 55y^2$

Exercice 3

- (1) $38a^2b^5 - 57a^3b^{12} + 19a^2b^4 = -19a^2b^4(2b + 3ab^8 - 1)$
 (2) $(a + 2b)(a - 4b) - 3(2b + a)(5a - b)$
 $= (a + 2b)[(a - 4b) - 3(5a - b)]$
 $= (a + 2b)(a - 4b - 15a + 3b)$
 $= (a + 2b)(-14a - b)$
 $= -(a + 2b)(14a + b)$
 (3) $12ab^2(5y - u) + 4a^2b(u - 5y)$
 $= 12ab^2(5y - u) - 4a^2b(5y - u)$
 $= 4ab(5y - u)(3b - a)$
 (4) $6(x - y)^2 - (y - x)(3x + 9y)$
 $= 6(x - y)^2 + 3(x - y)(x + 3y)$
 $= 3(x - y)[2(x - y) + (x + 3y)]$
 $= 3(x - y)(3x + y)$