

# الحساب الحرفي

## تمارين تطبيقية

### تمرين 1

(1) - بسط ما يلي :

$$b = 5x - 4 + 3x^3 - 2x^2 + 6 - 5x^2 + x - x^2 \quad ; \quad a = 3x + 2x^2 - 5 + 2x - 7x^2 + 11$$

$$d = 7x - 3x^2 - 8 + 5x^3 + 2x - x^2 - 4x^3 - 1 \quad ; \quad c = 4 - 2x^3 - 5x + 11 - 3x^2 + 7x - 2 + x^2$$

(2) - أزل الأقواس و المعقوفات ثم بسط ما يلي :

$$f = 5x^3 - [2x^2 - (-3x^3 + 2x - 7) + 3x - 1] \quad ; \quad e = (2x - 2) - (x^2 + 5x - 6) + (-2x^2 + 3)$$

$$g = 3x^2 + 2x - [ -(-5x^3 - 4x^2 + x + 6) + 2x - (-x^3) ]$$

$$h = (2x^2 - 1) - [ 3x - (2x^2 - x + 3) - (x + 1) - 4 ]$$

### تمرين 2

أنشر و بسط ما يلي :

$$\left(\frac{4}{3}x - \frac{1}{2}\right) \times (-2x) \quad ; \quad -3x \left(\frac{1}{2}x - \frac{2}{3}\right) \quad ; \quad (-3x - 5) \times 4x \quad ; \quad 2x(1 - x)$$

$$(2x - 1)(x + 3) \quad ; \quad -\frac{1}{2}x \left(2x^2 + 3x - \frac{1}{3}\right) \quad ; \quad 5x(2x^2 - x - 1)$$

$$3x(2x - 3)(x + 1) \quad ; \quad (-3x - 4)(-5 - x) \quad ; \quad (-5x + 3)(1 - x)$$

### تمرين 3

أنشر ثم بسط ما يلي :

$$b = -4x(-2x - 3) - 5x(3x - 1) \quad ; \quad a = 2x(1 - 4x) + 3x(2x + 2)$$

$$d = 4x^2 - 5x(2x - 1) + 3x(x^2 - x - 2) \quad ; \quad c = x(2x^2 - x - 3) + x^2(1 - x)$$

$$f = \left(\frac{x}{4} - 1\right) \left(\frac{-2}{3}x + 1\right) - \frac{1}{6}x^2(1 - x) \quad ; \quad e = -\frac{2}{3} \left(\frac{2}{3}x^2 - \frac{1}{2}x + 4\right) - \frac{5}{3}x^2 + 3x \left(\frac{-x}{9} - 2\right)$$

$$h = 2x^2 \left(\frac{-1}{3}x - 3\right) - \left(\frac{5}{6}x^3 + 7x^2 - \frac{1}{3}x + 2\right) \quad ; \quad g = \left(\frac{2}{5}x - 3\right) (-2x^2 + x - 1) - 2x^2 \left(\frac{x}{5} - 4\right)$$

## تمرين 4

أتمم ما يلي بما يناسب :

$$(\dots + 2)^2 = 9x^2 + \dots + 4 \quad ; \quad (5x + \dots)^2 = \dots + \dots + 9$$

$$\left(\dots - \frac{1}{2}\right)^2 = \frac{9}{4}x^2 - \dots + \dots \quad ; \quad (\dots - \dots)^2 = \dots - 56x + 16$$

$$(\dots + \dots)(\dots - \dots) = \frac{1}{4} - \frac{25}{9}x^2 \quad ; \quad \left(\frac{9}{4}x - \dots\right)(\dots + \dots) = \dots - 81$$

$$\left(\frac{3}{5} + \dots\right)\left(\dots - \frac{9}{7}x\right) = \dots - \dots \quad ; \quad \left(\dots - \frac{2}{3}\right)(5x + \dots) = \dots - \dots$$

## تمرين 5

أنشر و بسط ما يلي :

$$D = -2x(3-x)^2 \quad ; \quad C = (3x-4)(3x+4) \quad ; \quad B = (-3x-5)^2 \quad ; \quad A = (2x-1)^2$$

$$F = (3x-1)(3x+1) - 2x(5x+4) - (-x-3) \quad ; \quad E = (2x-1)^2 + (3x-1) - 2x(x+3)$$

$$H = \left(\frac{5}{2}x - 2\right)^2 - (3x+1)\left(\frac{1}{2}x - 2\right) \quad ; \quad G = \left(x + \frac{2}{3}\right)^2 + \left(\frac{3}{2}x - 4\right)^2 - \left(\frac{3}{2}x - 2\right)\left(\frac{3}{2}x + 2\right)$$

$$J = 2x^2\left(\frac{1}{2} - x\right)\left(\frac{1}{2} + x\right) - \frac{3}{5}x(x-2)^2 \quad ; \quad I = \frac{3}{2}x(-x+1)^2 + \frac{2}{3}x\left(-\frac{1}{2}x - 3\right)\left(-\frac{1}{2}x + 3\right)$$

## تمرين 6

نضع :

$$D = (a+b)(a-b) \quad \text{و} \quad C = a^2 - 2ab + b^2 \quad \text{و} \quad B = 3a - 2b \quad \text{و} \quad A = 2a + 3b$$

بسط  $A$  و  $B$  و  $C$  و  $D$  إذا علمت أن :  $a = 2x + 1$  و  $b = -x - 1$ .

## تمرين 7

عمل ما يلي :

$$C = 24ab^2 + 12a^2b - 4abc \quad ; \quad B = -25ab - 5abc \quad ; \quad A = 2a^2 + 6a$$

$$E = \frac{14}{3}a^2 - 6a\left(\frac{a}{3} + 3\right) + \frac{8}{3}a \quad ; \quad D = \frac{3}{2}a\left(x + \frac{1}{2}\right) - \frac{6}{2}a\left(\frac{2}{3}x - 3\right)$$

$$F = \frac{25}{2}x^2(x-2) + \frac{5x}{4}(x-2)$$

## تمرين 8

عمل ما يلي :

$$c = 12x^3 + 4x^2(x+3) - 4x^2 \quad ; ; \quad b = 3x^2 + 3x(2x-5) - 3x \quad ; ; \quad a = 5x(3x-2) + 5x(-2x+1)$$

$$f = (1-x)(x+1) - (1-x)^2 + (1-x) \quad ; ; \quad e = 5x(3-x) + (3-x)^2 \quad ; ; \quad d = 3x(2x+1) - (2x+1)$$

$$g = \left(\frac{5}{2}x - 1\right)\left(x - \frac{3}{2}\right) + 2\left(\frac{5}{2}x - 1\right) - \frac{4}{3}x\left(\frac{5}{2}x - 1\right)$$

$$h = 2x\left(\frac{3}{5}x - \frac{1}{2}\right) + 4x\left(\frac{3}{5}x - \frac{1}{2}\right) - \left(\frac{3}{5}x - \frac{1}{2}\right)$$

$$j = -3x\left(\frac{-2}{5}x - 1\right) + 3x\left(5 - \frac{3}{5}x\right) - 9x^2 \quad ; ; \quad i = \left(\frac{x}{7} + 3\right)^2 - \left(\frac{2x}{7} + 6\right)$$

$$k = -\frac{5}{7}x\left(\frac{2x}{5} + 1\right) + \left(\frac{6x}{5} + 3\right)$$

## تمرين 9

عمل ما يلي :

$$c = 81 - 36x + 4x^2 \quad ; ; \quad b = 9 + 12x + 4x^2 \quad ; ; \quad a = 25x^2 + 20x + 4$$

$$f = 144 - 4x^2 \quad ; ; \quad e = 16x^2 - 9 \quad ; ; \quad d = 16x^2 - 56x + 49$$

## تمرين 10

نضع :

$$C = (3x + 4)(5x + 3) - 2(5x + 3) \quad \text{و} \quad B = (5x - 3)(4x + 1) - (5x - 3) \quad \text{و} \quad A = 25x^2 - 9$$

(1) - أنشر ثم بسط :  $C$  و  $B$  .(2) - عمل :  $A$  و  $B$  و  $C$  .(3) - استنتج تعميل :  $A + B$  ثم  $A - C$  .(4) - أحسب  $A$  و  $B$  و  $C$  من أجل  $x = \frac{-1}{2}$  .

## تمرين 11

عمل ما يلي :

$$b = \left(\frac{2}{3}x - \frac{1}{2}\right) + \left(\frac{2}{3}x - \frac{1}{2}\right)\left(\frac{5}{7}x + \frac{2}{3}\right) \quad ; ; \quad a = \frac{9x^2}{4} - \frac{1}{9}$$

$$d = \left(\frac{5}{2}x - \frac{1}{3}\right)(2x + 4) - \left(\frac{5}{2}x - \frac{1}{2}\right)(6 - 5x) \quad ; ; \quad c = \left(\frac{1}{2}x + 3\right)^2 - \left(\frac{1}{2}x + 3\right)\left(\frac{5}{3}x - \frac{1}{2}\right)$$

$$f = 9x^2 - \frac{9}{2}x + \frac{9}{16} \quad ; ; \quad e = \frac{16}{9}x^2 + \frac{16}{9}x + \frac{4}{9}$$