أجوبة السلسلة 1

التمرين 1

1.

$F=(2x+3)(5-x)-(2x+3)^2$

$F=(10x-2x^2+15-3x)-(2x+3)(2x+3)$

$F=-2x^2+7x+15-(4x^2+6x+6x+9)$

$F=-2x^2+7x+15-4x^2-12x-9$

$F=-6x^2-5x+6$

2.

$F=(2x+3)(5-x)-(2x+3)^2$

$F=(2x+3)(5-x)-(2x+3)(2x+3)$

$F=(2x+3)[(5-x)-(2x+3)]$

$F=(2x+3)(5-x-2x-3)$

$F=(2x+3)(-3x+2)$

3. $(2x+3)(2-3x)=0$

$2x+3=0$ او $2-3x=0$

$2x=-3$ او $-3x=-2$

$x=-\frac{3}{2}$ او $x=\frac{2}{3}$

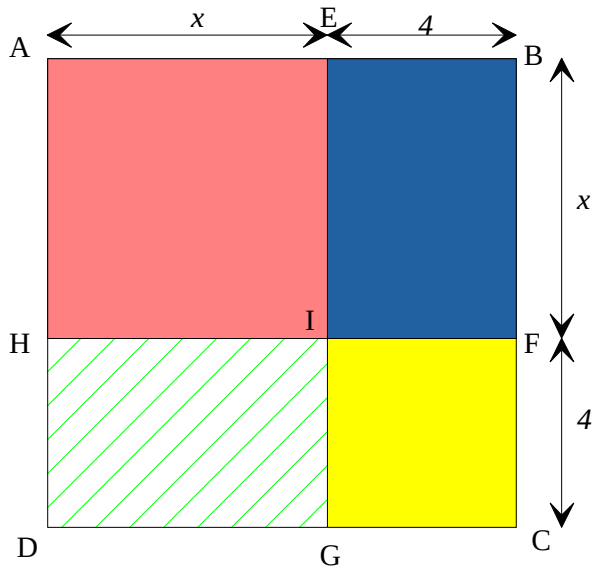
حلان للمعادلة $-\frac{3}{2}$ و $\frac{2}{3}$.

4. $x=3$,

$F=-6\times3^2-5\times3+6=-6\times9-15+6=-54-15+6=-63$.

, $F=-63$

تمرين 2



الجزء الاول

a. .2

Aire (ABCD) = (x + 4) ² .

Aire (ABCD) = Aire (AEIH) + Aire (EBFI) +
Aire(HIGD + Aire(IFCG)
Aire (ABCD) = $x^2 + 4x + 4x + 4^2$

. $(x+4)^2=x^2+8x+16$ **: (x + 4) ² = $x^2 + 4x + 4x + 4^2 = x^2 + 8x + 16$**

الجزء الثاني

103^2 **= (100 + 3) ² = 100 ² + 2 × 100 × 3 + 3 ² = 10 000 + 600 + 9 = 10 609**

3.: $(a+b)^2$ **:** ***(a + b) (a + b) = a² + ab + ba + b² = a² + 2ab + b²***

$(a-b)^2$: **(a – b) (a – b) = a² - ab – ba + b² = a² - 2ab + b²**

(a + b) (a – b) = a² - ab + ba – b² = a² - b²

2. 102 × 98 : (100 + 2) (100 – 2) = 100 ² - 2 ² = 10 000 – 4 = 9 996

:

(a + b) ² = a² + 2ab + b² ; (a – b) ² = a² - 2ab + b² ; (a + b) (a – b) = a² - b².

$(x+5)^2 = x^2 + 2\times x\times 5 + 5^2 =$ $x^2+10x+25$;

$(x-3)^2 = x^2 - 2\times x\times 3 + 3^2 =$ x^2-6x+9 ;

$(x-7)(x+7) = x^2 - 7^2 =$ x^2-49

التمرين 3

$x = 1$ ثم $x = 3$

:

a) $3x^2$; $(3x)^2$	**b) $(x + 2)^2$; $x^2 + 4$**	**c) $(x - 5)^2$, $x^2 - 25$**
$x = 1$	**$x = 1$**	**$x = 1$**
$3x^2 = 3\times 1^2 = 3$	$(x+2)^2 = (1+2)^2 = 3^2 = 9$	$(x-5)^2 = (1-5)^2 = (-4)^2 = 16$
$(3x)^2 = (3\times 1)^2 = 3^2 = 9$	$x^2+4 = 1^2+4 = 1+4 = 5$	$x^2-25 = 1^2-25 = 1-25 = -24$
$x = 3$	**$x = 3$**	**$x = 3$**
$3x^2 = 3\times 3^2 = 3\times 9 = 27$	$(x+2)^2 = (3+2)^2 = 5^2 = 25$	$(x-5)^2 = (3-5)^2 = (-2)^2 = 4$
$(3x)^2 = (3\times 3)^2 = 9^2 = 81$	$x^2+4 = 3^2+4 = 9+4 = 13$	$x^2-25 = 3^2-25 = 9-25 = -16$

2°) a) $3x^2 \neq (3x)^2$ b) $(x + 2)^2 \neq x^2 + 4$ c) $(x - 5)^2 \neq x^2 - 25$

3°)

$(2x)^2 =$ **$2x \times 2x = 4x^2$**

$(5x)^2 =$ **$25x^2$**

$64a^2 =$ **$(8a)^2$**

$48y = 2\times$ **$24y$**

$\frac{4}{3}u = 2\times \boxed{\frac{2}{3}u}$

$-2\times 7v =$ **$-14v$**

$(ab)^2 =$ **$ab \times ab$**

$(-3x)^2 =$ **$9x^2$**

$6x = 2\times$ **$3x$**

$-t = 2\times \boxed{\left(-\frac{t}{2}\right)}$

$\left(-\frac{2}{3}v\right)^2 = \boxed{\frac{4}{9}v^2}$

$\frac{-t}{2} = -2\times \boxed{\left(\frac{t}{4}\right)}$

$2\times 8a =$ **$16a$**

$-3\times 2y =$ **$-6y$**

$8t = 2\times$ **$4t$**

$169y^2 =$ **$(13y)^2$**

$\frac{16}{9}w^2 = \boxed{\left(\frac{4}{3}w\right)^2}$

$\frac{4}{3}y = 2\times \boxed{\frac{2}{3}y}$

التمرين 4

$(x+5)^2 = x^2 + 2\times x\times 5 + 5^2 =$ $x^2+10x+25$; $(x-2)^2 = x^2 - 2\times x\times 2 + 2^2 =$ x^2-4x+4

$(x+4)^2 = x^2 + 2\times x\times 4 + 4^2 =$ $x^2+8x+16$

$(-7-y)^2=(-7)^2-2\times(-7)\times y+y^2=\boxed{49+14y+y^2=y^2+14y+49}$

$(2x-9)^2=(2x)^2-2\times 2x\times 9+9^2=\boxed{4x^2-36x+81}$;

$(-x+7)^2=(-x)^2+2\times(-x)\times 7+7^2=\boxed{x^2-14x+49}$

$(5x+1)^2=(5x)^2+2\times 5x\times 1+1^2=\boxed{25x^2+10x+1}$; $(12x-1)^2=(12x)^2-2\times 12x\times 1+1^2=\boxed{144x^2-24x+1}$

$(9-x)^2=9^2-2\times 9\times x+x^2=\boxed{81-18x+x^2=x^2-18x+81}$

$(2+3x)^2=2^2+2\times 2\times 3x+(3x)^2=4+12x+9x^2=\boxed{9x^2+12x+4}$

$(2y-1)^2=(2y)^2-2\times 2y\times 1+1^2=\boxed{4y^2-4y+1}$;

$(6+y)^2=6^2+2\times 6\times y+y^2=36+12y+y^2=\boxed{y^2+12y+36}$

$(-x-5)^2=(-x)^2-2\times(-x)\times 5+5^2=\boxed{x^2+10x+25}$;

$(8x+3)^2=(8x)^2+2\times 8x\times 3+3^2=\boxed{64x^2+48x+9}$

$(z-5)^2=z^2-2\times z\times 5+5^2=\boxed{z^2-10z+25}$; $(7x-3)^2=(7x)^2-2\times 7x\times 3+3^2=\boxed{49x^2-42x+9}$

$(-3x-2)^2=(-3x)^2-2\times(-3x)\times 2+2^2=\boxed{9x^2+12x+4}$

$(-5x-3)^2=(-5x)^2-2\times(-5x)\times 3+3^2=\boxed{25x^2+30x+9}$

1°) $(x-3)(x+3)=x^2-3^2=\boxed{x^2-9}$; $(2x+5)(2x-5)=(2x)^2-5^2=\boxed{4x^2-25}$

2°) $(y-7)(y+7)=y^2-7^2=\boxed{y^2-49}$; $(3-x)(3+x)=3^2-x^2=\boxed{9-x^2}$

$\left(x+\frac{1}{3}\right)\left(x-\frac{1}{3}\right)=x^2-\left(\frac{1}{3}\right)^2=\boxed{x^2-\frac{1}{9}}$; $(2x+3)(2x-3)=(2x)^2-3^2=\boxed{4x^2-9}$

$(2-3x)(2+3x)=2^2-(3x)^2=\boxed{4-9x^2}$; $\left(\frac{2}{3}x+\frac{1}{4}\right)\left(\frac{2}{3}x-\frac{1}{4}\right)=\left(\frac{2}{3}x\right)^2-\left(\frac{1}{4}\right)^2=\boxed{\frac{4}{9}x^2-\frac{1}{16}}$

التمرين 5

a) $(x+5)^2=x^2+10x+25$; **b)** $(y-1)^2=y^2-2y+1$; **c)** $(z+4)^2=z^2+8z+16$;

d) $(n+7)(n-7)=n^2-49$; **e)** $(3x+4)^2=9x^2+24x+16$; **f)** $(4x-5)^2=16x^2-40x+25$

التمرين 6

$$31^2=(30+1)^2=30^2+2\times 30\times 1+1^2=900+60+1=961$$

$21^2=(20+1)^2=400+40+1=441$; $19^2=(20-1)^2=400-40+1=361$

$19\times 21=(20-1)(20+1)=400-1=399$; $89^2=(90-1)^2=8\,100-180+1=7\,921$

$91^2 = (90+1)^2 = 8\,100 + 180 + 1 = 8\,281$; $91 \times 89 = (90+1)(90-1) = 8\,100 - 1 = 8\,099$

$201^2 = (200+1)^2 = 40\,000 + 400 + 1 = 40\,401$; $199^2 = (200-1) = 40\,000 - 400 + 1 = 39\,601$

التمرين 7

$(\sqrt{2}+1)^2 = (\sqrt{2})^2 + 2\times\sqrt{2}\times 1 + 1^2 = 2 + 2\sqrt{2} + 1 = \boxed{3+2\sqrt{2}}$

$(\sqrt{3}-2)^2 = (\sqrt{3})^2 - 2\times\sqrt{3}\times 2 + 2^2 = 3 - 4\sqrt{3} + 4 = \boxed{7-4\sqrt{3}}$

$(2\sqrt{5}+\sqrt{3})^2 = (2\sqrt{5})^2 + 2\times 2\sqrt{5}\times\sqrt{3} + (\sqrt{3})^2 = 4\times 5 + 4\sqrt{15} + 3 = 20 + 4\sqrt{15} + 3 = \boxed{23+4\sqrt{15}}$

$(3\sqrt{2}-2\sqrt{2})^2 = (\sqrt{2})^2 = \boxed{2}$

$(\sqrt{5}+3)(\sqrt{5}-3) = (\sqrt{5})^2 - 3^2 = 5 - 9 = \boxed{-4}$

$(3\sqrt{7}-2)(3\sqrt{7}+2) = (3\sqrt{7})^2 - 2^2 = 9\times 7 - 4 = 63 - 4 = \boxed{59}$

$(-5\sqrt{5}+\sqrt{2})(-5\sqrt{5}-\sqrt{2}) = (-5\sqrt{5})^2 - (\sqrt{2})^2 = 25\times 5 - 2 = 125 - 2 = \boxed{123}$

التمرين 8

$A = 15x - (x+7)^2$

$A = 15x - (x^2 + 14x + 49)$

$A = 15x - x^2 - 14x - 49$

$\boxed{A = -x^2 + x - 49}$

$B = x(x-1)^2 - (x-2)^2$

$B = x(x^2 - 2x + 1) - (x^2 - 4x + 4)$

$B = x^3 - 2x^2 + x - x^2 + 4x - 4$

$\boxed{B = x^3 - 3x^2 + 5x - 4}$

$C = (x+2)(x-2) + (x+1)^2$

$C = x^2 - 4 + (x^2 + 2x + 1)$

$C = x^2 - 4 + x^2 + 2x + 1$

$\boxed{C = 2x^2 + 2x - 3}$

$D = (x+3)^2 - (x-2)^2$

$D = (x^2 + 6x + 9) - (x^2 - 4x + 4)$

$D = x^2 + 6x + 9 - x^2 + 4x - 4$

$\boxed{D = 10x + 5}$

$E = \left(x + \frac{1}{2}\right)^2 - \left(\frac{x}{2} + 1\right)^2$

$E = \left(x^2 + x + \frac{1}{4}\right) - \left(\frac{x^2}{4} + x + 1\right)$

$E = x^2 + x + \frac{1}{4} - \frac{x^2}{4} - x - 1$

$E = \frac{4}{4}x^2 - \frac{1}{4}x^2 + \frac{1}{4} - \frac{4}{4}$

$F = (x+y)^2 - (x-y)$

$\boxed{F = x^2 + 2xy + y^2 - x + y}$

$$E = \frac{3}{4}x^2 - \frac{3}{4}$$

التمرين 9

1.

$$D = [(3x-1)(2x+5)] - [(3x-1)^2]$$
$$D = [6x^2 + 15x - 2x - 5] - [9x^2 - 6x + 1]$$
$$D = [6x^2 + 13x - 5] - [9x^2 - 6x + 1]$$
$$D = 6x^2 + 13x - 5 - 9x^2 + 6x - 1$$
$$D = -3x^2 + 19x - 6$$

2.

$$D = (3x-1)(2x+5) - (3x-1)^2$$
$$D = (3x-1)[(2x+5) - (3x-1)]$$
$$D = (3x-1)[2x + 5 - 3x + 1]$$
$$D = (3x-1)(-x+6)$$

التمرين 11

1.

$$E = [(2x-3)^2] - [3(2x-3)]$$
$$E = [4x^2 - 12x + 9] - [6x - 9]$$
$$E = 4x^2 - 12x + 9 - 6x + 9$$
$$E = 4x^2 - 18x + 18$$

2.

$$E = (2x-3)^2 - 3(2x-3)$$
$$E = (2x-3)[(2x-3) - 3]$$
$$E = (2x-3)(2x-3-3)$$
$$E = (2x-3)(2x-6)$$

3.

$$(2x-3)(2x-6) = 0$$

2x – 3 = 0 او **2x – 6 = 0**

2x = 3 **2x = 6**

$x = \frac{3}{2}$ **x = 3**

العددان $\frac{3}{2}$ و **3** حلان للعادلة

4.

$x = \sqrt{2}$

$$E = 4\sqrt{2}^2 - 18 \times \sqrt{2} + 18 = 4 \times 2 - 18\sqrt{2} + 18 = -18\sqrt{2} + 26$$