

تمرين 1 : (9,75)

(1) أكتب على شكل عدد صحيح :
 $C = (2^3)^6 \times 2^{-17}$; $B = -\sqrt{\sqrt{4}} \times \sqrt{\sqrt{4}}$; $A = \sqrt{400^2}$

6×0,75

$F = 37 - \sqrt{3^2 + 2^2 + 6^2}$; $E = \sqrt{36} - \sqrt{81}$; $D = \sqrt{9 \times 10^2}$

(2) بسط :

$C = (3\sqrt{7} - \sqrt{5})^2$; $B = -\sqrt{600}$; $A = 3\sqrt{5} - 7\sqrt{5} + 17\sqrt{5}$

3×0,75

(3) أنشر وبسط :

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

6×0,5

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

تمرين 2 : (4,5)

(1) أحسب و بسط :

$C = -(-x)^4$; $B = \frac{2}{3^{-2}}$; $A = (-3)^3$

3×0,5

(2) حدد الكتابة العلمية ل : $A = 3088 \times 10^{3085}$

0,5

(3) حل المعادلات : $\boxed{1}$ $9 + x^2 = 0$; $\boxed{2}$ $5 - x^2 = 0$

2×0,5

(4) اجعل المقام عددا صحيحا : $A = \frac{-11}{\sqrt{11}}$; $B = \frac{1 + \sqrt{3}}{2\sqrt{3} - 1}$

1,5

تمرين 3 : (4,75)

(1) عمل :

$C = x^2 - 4$; $B = x^2 - 2x + 1$; $A = 5x + x^2$

$E = x^2 - 2\sqrt{5}x + 5$; $D = 3x^2 - 7$

5×0,5

(2) أكتب على شكل $a\sqrt{b}$:

$B = \sqrt{96} - 2\sqrt{6} + 2\sqrt{24} - 3\sqrt{54}$; $A = \sqrt{3} \times \sqrt{4-\sqrt{12}} \times \sqrt{4+\sqrt{12}}$

2×0,5

(3) أحسب و بسط :

$B = \frac{8 \times 10^{-26} \times 3 \times 10^{27}}{24 \times 10^{-1}}$; $A = \left[\left(\frac{2}{5}\right)^{-3}\right]^5 \times \left[\left(\sqrt{\frac{2}{5}}\right)^{10}\right]^3$

1,25

حل تمرين 1 :

(1) أكتب على شكل عدد صحيح :

$$E = \sqrt{36} - \sqrt{81} = 6 - 9 = \boxed{-3}$$

$$F = 37 - \sqrt{3^2 + 2^2 + 6^2}$$

$$= 37 - \sqrt{9 + 4 + 36}$$

$$F = 37 - \sqrt{49} = 36 - 7 = \boxed{29}$$

$$C = (2^3)^6 \times 2^{-17} = 2^{18} \times 2^{-17} = 2^1$$

$$\boxed{C = 2}$$

$$D = \sqrt{9 \times 10^2} = \sqrt{9} \times \sqrt{10^2} = 3 \times 10$$

$$\boxed{D = 30}$$

$$A = \sqrt{400^2} = \boxed{400}$$

$$B = -\sqrt{4} \times \sqrt{4}$$

$$= -\sqrt{2} \times \sqrt{2} = \boxed{-2}$$

(2) بسط :

$$C = (3\sqrt{7} - \sqrt{5})^2 = (3\sqrt{7})^2 - 2 \times 3\sqrt{7} \times \sqrt{5} + \sqrt{5}^2$$
$$= 63 - 6\sqrt{35} + 5$$

$$\boxed{C = 68 - 6\sqrt{35}}$$

$$B = -\sqrt{600}$$

$$= -\sqrt{6 \times 100} = -\sqrt{6} \times \sqrt{100}$$

$$\boxed{B = -10\sqrt{6}}$$

$$A = 3\sqrt{5} - 7\sqrt{5} + 17\sqrt{5}$$

$$= (3 - 7 + 17)\sqrt{5}$$

$$\boxed{A = 13\sqrt{5}}$$

(3) أنشر وبسط :

$$C = (x+1)^2$$
$$= x^2 + 2 \times x \times 1 + 1^2$$

$$\boxed{C = x^2 + 2x + 1}$$

$$B = (x+2)(x-2)$$

$$= x^2 - 2^2$$

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

$$A = 3x(4-3x)$$

$$= 3x \times 4 - 3x \times 3x$$

$$\boxed{A = 12x - 9x^2}$$

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

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

$$\boxed{F = \frac{x^2}{4} - 1}$$

$$E = (3-x)(3+x)$$

$$= 3^2 - x^2$$

$$\boxed{E = 9 - x^2}$$

$$D = (6-x)^2$$

$$= 6^2 - 2 \times 6 \times x + x^2$$

$$\boxed{D = 36 - 12x + x^2}$$

حل تمرين 2 :

(1) بسط :

$$C = -(-x)^4 = \boxed{-x^4}$$

$$B = \frac{2}{3^{-2}} = 2 \times 3^2 = \boxed{18}$$

$$A = (-3)^3 = \boxed{-27}$$

$$A = 3088 \times 10^{3085} = 3,088 \times 10^3 \times 10^{3085} = \boxed{3,088 \times 10^{3088}}$$
 (2) الكتابة العلمية ل :

(3) حل المعادلات :

$$5 - x^2 = 0 \quad \text{لدينا :}$$

$$x^2 = 5 \quad \text{إذن :}$$

ومنه : المعادلة تقبل حلين هما : $\sqrt{5}$ و $-\sqrt{5}$

$$9 + x^2 = 0 \quad \text{لدينا :}$$

$$x^2 = -9 \quad \text{يعني :}$$

ومنه : المعادلة ليس لها حل

(4) أجل اجذر المربع من المقام :

$$B = \frac{1 + \sqrt{3}}{2\sqrt{3} - 1} = \frac{(1 + \sqrt{3})(2\sqrt{3} + 1)}{(2\sqrt{3} - 1)(2\sqrt{3} + 1)} = \frac{2\sqrt{3} + 1 + 6 + \sqrt{3}}{(2\sqrt{3})^2 - 1}$$

$$\boxed{B = \frac{3\sqrt{3} + 7}{11}}$$

$$A = \frac{-11}{\sqrt{11}} = \frac{-11 \times \sqrt{11}}{\sqrt{11} \times \sqrt{11}} = \frac{-11\sqrt{11}}{11}$$

$$\boxed{A = -\sqrt{11}}$$

(1) عمل :

$$\begin{aligned} C &= x^2 - 4 \\ &= x^2 - 2^2 \\ C &= (x-2)(x+2) \end{aligned}$$

$$\begin{aligned} B &= x^2 - 2x + 1 \\ &= x^2 - 2 \times x \times 1 + 1^2 \\ B &= (x-1)^2 \end{aligned}$$

$$\begin{aligned} A &= 5x + x^2 \\ A &= x(5+x) \end{aligned}$$

$$\begin{aligned} D &= 3x^2 - 7 \\ &= (\sqrt{3x})^2 - \sqrt{7}^2 \\ D &= (\sqrt{3x} - \sqrt{7})(\sqrt{3x} + \sqrt{7}) \end{aligned}$$

$$\begin{aligned} E &= x^2 - 2\sqrt{5}x + 5 \\ &= x^2 - 2 \times x \times \sqrt{5} + \sqrt{5}^2 \\ E &= (x - \sqrt{5})^2 \end{aligned}$$

(2) بسط :

$$\begin{aligned} B &= \sqrt{96} - 2\sqrt{6} + 2\sqrt{24} - 3\sqrt{54} \\ &= \sqrt{16 \times 6} - 2\sqrt{6} + 2\sqrt{4 \times 6} - 3\sqrt{9 \times 6} \\ &= 4\sqrt{6} - 2\sqrt{6} + 4\sqrt{6} - 9\sqrt{6} \\ B &= -3\sqrt{6} \end{aligned}$$

$$\begin{aligned} A &= \sqrt{3} \times \sqrt{4 - \sqrt{12}} \times \sqrt{4 + \sqrt{12}} \\ &= \sqrt{3} \times \sqrt{(4 - \sqrt{12})(4 + \sqrt{12})} \\ &= \sqrt{3} \times \sqrt{4^2 - \sqrt{12}^2} \\ &= \sqrt{3} \times \sqrt{4} \\ A &= 2\sqrt{3} \end{aligned}$$

(3) بسط :

$$\begin{aligned} B &= \frac{8 \times 10^{-26} \times 3 \times 10^{27}}{24 \times 10^{-1}} \\ &= \frac{8 \times 3 \times 10^{-26} \times 10^{27}}{24 \times 10^{-1}} \\ &= \frac{24 \times 10^{-26+27}}{24 \times 10^{-1}} \\ &= \frac{10^1}{10^{-1}} \\ &= 10^{1-(-1)} \\ &= 10^2 \\ B &= 100 \end{aligned}$$

$$\begin{aligned} A &= \left[\left(\frac{2}{5} \right)^{-3} \right]^5 \times \left[\left(\sqrt{\frac{2}{5}} \right)^{10} \right]^3 \\ &= \left(\frac{2}{5} \right)^{-15} \times \left(\sqrt{\frac{2}{5}} \right)^{30} \\ &= \left(\frac{2}{5} \right)^{-15} \times \left(\sqrt{\frac{2}{5}} \right)^{15} \\ &= \left(\frac{2}{5} \right)^{-15} \times \left(\frac{2}{5} \right)^{15} \\ &= \left(\frac{2}{5} \right)^{-15+15} \\ &= \left(\frac{2}{5} \right)^0 \\ A &= 1 \end{aligned}$$

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