

التمرين الأول

(1)

$\begin{aligned} D &= \sqrt{2+\sqrt{3}} \times \sqrt{2-\sqrt{3}} \\ &= \sqrt{(2+\sqrt{3})(2-\sqrt{3})} \\ &= \sqrt{(2)^2 - (\sqrt{3})^2} \\ &= \sqrt{4-3} \\ &= \sqrt{1} \\ &= 1 \end{aligned}$	$\begin{aligned} B &= \sqrt{28} - \frac{1}{3}\sqrt{63} + \sqrt{175} \\ &= \sqrt{2^2 \times 7} - \frac{1}{3}\sqrt{3^2 \times 7} + \sqrt{5^2 \times 7} \\ &= 2\sqrt{7} - \sqrt{7} + 5\sqrt{7} \\ &= (2-1+5)\sqrt{7} \\ &= 6\sqrt{7} \end{aligned}$	$\begin{aligned} A &= \sqrt{15} \times \sqrt{12} \times \sqrt{5} \\ &= \sqrt{5 \times 3} \times \sqrt{2^2 \times 3} \times \sqrt{5} \\ &= \sqrt{5} \times \sqrt{3} \times 2\sqrt{3} \times \sqrt{5} \\ &= (\sqrt{5})^2 \times (\sqrt{3})^2 \times 2 \\ &= 5 \times 3 \times 2 \\ &= 30 \end{aligned}$
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$$\begin{aligned} C &= \frac{(x^2 y^{-4})^{-2} z}{x^2 (y^{-4} z)^{-1}} \\ &= \frac{x^{-4} y^8 z}{x^2 y^4 z^{-1}} \\ &= \frac{y^{8-4} z^{1-(-1)}}{x^{2-(-4)}} \\ &= \frac{y^4 z^2}{x^6} \\ &= x^{-6} y^4 z^2 \end{aligned}$$

(2)

$$\begin{aligned} \sqrt{43+30\sqrt{2}} &= \sqrt{(3\sqrt{2}+5)^2} & (3\sqrt{2}+5)^2 &= (3\sqrt{2})^2 + 2 \times (3\sqrt{2}) \times 5 + (5)^2 \\ &= |3\sqrt{2}+5| & \text{إذن} &= 18 + 30\sqrt{2} + 25 \\ &= 3\sqrt{2}+5 & &= 43 + 30\sqrt{2} \end{aligned}$$

(3)

$$F = 1445,45$$
$$= 1,44545 \times 10^{-3}$$

$$F = \frac{(0,0005)^2 \times (0,002)^4 \times 60}{(10^{-2})^{-2}}$$
$$= \frac{5 \times 10^{-4} \times 2 \times 10^{-3} \times 6 \times 10}{10^4}$$
$$= 6 \times (5 \times 2) \times 10^{-4-3+1-4}$$
$$= 6 \times 10 \times 10^{-10}$$
$$= 6 \times 10^{1-10}$$
$$= 6 \times 10^{-9}$$

فإن ABC قائم الزاوية في الرأس B

$$AB^2 + BC^2 = (\sqrt{5})^2 + (\sqrt{11})^2$$
$$= 5 + 11$$
$$= 16$$
$$= AC^2$$

(4)

بما أن

التمرين الثاني

(1)

• $4\sqrt{7} > 7\sqrt{2}$ بما أن $(7\sqrt{2})^2 = 49 \times 2 = 98$ و $(4\sqrt{7})^2 = 16 \times 7 = 112$ فإن $112 > 98$

$$\left(\sqrt{4\sqrt{7}-2}\right)^2 - \left(\sqrt{7\sqrt{2}-3}\right)^2 = (4\sqrt{7}-2) - (7\sqrt{2}-3)$$

• لدينا :

$$= (4\sqrt{7}-7\sqrt{2})+1$$

نعلم أن $4\sqrt{7} > 7\sqrt{2}$ أي $4\sqrt{7}-7\sqrt{2} > 0$ إذن $\left(\sqrt{4\sqrt{7}-2}\right)^2 - \left(\sqrt{7\sqrt{2}-3}\right)^2 > 0$ ومنه فإن

$$\sqrt{4\sqrt{7}-2} > \sqrt{7\sqrt{2}-3} \text{ وكذلك } \left(\sqrt{4\sqrt{7}-2}\right)^2 > \left(\sqrt{7\sqrt{2}-3}\right)^2$$

(2)

• $-3 \leq x+y \leq 1$

• $-4 \leq x \leq -2$ و $-3 \leq -y \leq -1$ إذن $-7 \leq x-y \leq -3$

• $2 \leq -x \leq 4$ و $1 \leq y \leq 3$ إذن $2 \leq -xy \leq 12$ أي $-12 \leq xy \leq -2$

$$\begin{aligned} & \bullet \quad -4 \leq \frac{x}{y} \leq \frac{-2}{3} \text{ أي } \frac{2}{3} \leq \frac{-x}{y} \leq 4 \text{ إذن } \frac{1}{3} \leq \frac{1}{y} \leq 1 \text{ و } 2 \leq -x \leq 4 \\ & \bullet \quad 1 \leq x+5y \leq 13 \text{ إذن } 5 \leq 5y \leq 15 \text{ و كذلك } 4 \leq x^2 \leq 16 \text{ إذن } 5 \leq x^2+1 \leq 17 \text{ أي } \frac{1}{17} \leq \frac{1}{x^2+1} \leq \frac{1}{5} \text{ و} \\ & \text{عليه فإن } \frac{1}{17} \leq \frac{x+5y}{x^2+1} \leq \frac{13}{5} \end{aligned}$$

التمرين الثالث

$$\begin{aligned} 5x+2x=3+4 & \text{ تكافئ } 5x-4=-2x+3 \\ 7x=7 & \text{ تكافئ } \\ x=1 & \text{ تكافئ } \end{aligned}$$

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$$\begin{aligned} 3x+2x \leq -2-6 & \text{ تكافئ } 3(x+2) \leq -2(x+1) \\ 5x \leq -8 & \text{ تكافئ } \\ x \leq \frac{-8}{5} & \text{ تكافئ } \end{aligned}$$

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$$\begin{aligned} (3x+5)^2 - (x-2)^2 &= 0 \text{ تكافئ } (3x+5)^2 = (x-2)^2 \\ [(3x+5)+(x-2)][(3x+5)-(x-2)] &= 0 \text{ تكافئ } \\ (4x+3)(2x+7) &= 0 \text{ تكافئ } \\ (2x+7)=0 \text{ أو } (4x+3)=0 & \text{ تكافئ } \\ x = -\frac{7}{2} \text{ أو } x = -\frac{3}{4} & \text{ تكافئ } \end{aligned}$$

أتمم.....