

تصحيح الفرض الأول النموذج 6 للدورة الأولى

التمرين الأول :

(1) أنشر وبسط مايلي :

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

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

التمرين الثاني :

(1) بسط ما يلي : $A = \sqrt{2}^2 \times \sqrt{2}^3$

$$A = \sqrt{2}^2 \times \sqrt{2}^2 \times \sqrt{2} = 2 \times 2 \times \sqrt{2} = 4\sqrt{2}$$

$$B = \frac{(x^3)^{-2} \times (x^2)^{-3}}{(x^3)^4} = \frac{x^{-6} \times x^{-6}}{x^{12}}$$

$$= \frac{x^{-12}}{x^{12}} = x^{-12-12} = x^{-24}$$

$$C = \frac{(ab^{-2})^3 \times (a^{-1}b^2)^{-2}a^3}{(ab^{-2})^3 \times (a^{-2}b^2)^3a^{-3}b^{-2}}$$

$$= \frac{a^2b^{-4}a^3}{a^{-6}b^6a^{-3}b^{-2}} = \frac{a^5b^{-4}}{a^{-9}b^4}$$

$$= a^{5-(-9)}b^{-4-4} = a^{14}b^{-8}$$

(2) اعط الكتابة العلمية للأعداد التالية :

$$1000 = 10^3$$

$$140000 \times 10^4 = 1,4 \times 10^5 \times 10^3$$

$$= 1,4 \times 10^8$$

$$0,0000018 = 1,8 \times 10^{-6}$$

التمرين الثالث :

(1) بسط مايلي :

$$I = 5\sqrt{9} + 2\sqrt{36} = 5\sqrt{3^2} + 2\sqrt{6^2}$$

$$= 5 \times 3 + 2 \times 6 = 15 + 12 = 27$$

$$J = 4\sqrt{125} - 2\sqrt{20} + 4\sqrt{8}$$

$$= 4\sqrt{25 \times 5} - 2\sqrt{4 \times 5} + 4\sqrt{4 \times 2}$$

$$= 20\sqrt{5} - 4\sqrt{5} + 8\sqrt{2}$$

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

$$= 2x + 6 + 3x - 6$$

$$= 5x$$

$$B = (\sqrt{5} + 1)^2$$

$$= \sqrt{5}^2 + 2 \times \sqrt{5} \times 1 + 1^2$$

$$= 5 + 2\sqrt{5} + 1$$

$$= 6 + 2\sqrt{5}$$

$$C = (x - 1)(x + 1) + (\sqrt{2} - x)^2$$

$$= x^2 - 1^2 + \sqrt{2}^2 - 2 \times \sqrt{2} \times x + x^2$$

$$= x^2 - 1 + 2 - 2\sqrt{2}x + x^2$$

$$= 2x^2 + 1 - 2\sqrt{2}x$$

(2) عمل مايلي :

$$A = x^2 - 9 = x^2 - 3^2$$

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

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

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

$$= (4 + x)(2x + 1)$$

$$C = 49x^2 + 14x + 1 + 3(7x + 1)$$

$$= (7x)^2 + 2 \times 7x \times 1 + 1^2 + 3(7x + 1)$$

$$= (7x + 1)^2 + 3(7x + 1)$$

$$= (7x + 1)(7x + 1 + 3)$$

$$= (7x + 1)(7x + 4)$$

$$D = (\sqrt{2}x - 1)(x - 3) + \left(x - \frac{1}{\sqrt{2}}\right)(x - 1)$$

$$\begin{aligned} \frac{3 + \sqrt{2}}{3 - \sqrt{2}} &= \frac{(3 + \sqrt{2})(3 + \sqrt{2})}{(3 - \sqrt{2})(3 + \sqrt{2})} \\ &= \frac{(3 + \sqrt{2})^2}{3^2 - \sqrt{2}^2} = \frac{(3 + \sqrt{2})^2}{9 - 2} \\ &= \frac{(3 + \sqrt{2})^2}{7} \end{aligned}$$

$$= 16\sqrt{5} + 8\sqrt{2}$$

$$\begin{aligned} K &= \sqrt{2^2 + \sqrt{5}^2 + \sqrt{7}^2} \\ &= \sqrt{4 + 5 + 7} = \sqrt{16} = \sqrt{4^2} = 4 \end{aligned}$$

$$L = \sqrt{7 + 4\sqrt{3}}$$

$$= \sqrt{2^2 + 2 \times 2 \times \sqrt{3} + \sqrt{3}^2}$$

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

(2) بين أن : $\sqrt{x} + \sqrt{y} = \sqrt{x + y + 2\sqrt{xy}}$

$$\sqrt{x + y + 2\sqrt{xy}} = \sqrt{\sqrt{x}^2 + \sqrt{y}^2 + 2\sqrt{x}\sqrt{y}}$$

$$= \sqrt{\sqrt{x}^2 + 2\sqrt{x}\sqrt{y} + \sqrt{y}^2}$$

$$= \sqrt{(\sqrt{x} + \sqrt{y})^2} = \sqrt{x} + \sqrt{y}$$

(3) احذف الجذر المربع من المقام :

$$\frac{2}{\sqrt{3}} = \frac{2 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{2\sqrt{3}}{\sqrt{3}^2} = \frac{2\sqrt{3}}{3}$$

$$\frac{5}{\sqrt{2} + 1} = \frac{5 \times (\sqrt{2} - 1)}{(\sqrt{2} + 1)(\sqrt{2} - 1)}$$

$$= \frac{5(\sqrt{2} - 1)}{\sqrt{2}^2 - 1^2} = \frac{5(\sqrt{2} - 1)}{2 - 1}$$

$$= \frac{5(\sqrt{2} - 1)}{1} = 5(\sqrt{2} - 1)$$