تصحيح الفرض الأول النموذج 7 للدورة الأولى

التمـــرين 1 :

1) أحسب ما يلي :

$$A = \sqrt{3+\sqrt{5}} \times \sqrt{3-\sqrt{5}}$$

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

$$= \sqrt{3^2 - \sqrt{5}^2}$$

$$= \sqrt{9-5} = \sqrt{4} = 2$$

$$B = \frac{\sqrt{18}}{\sqrt{2}} + \sqrt{12} \times \sqrt{3}$$

$$= \frac{\sqrt{9} \times \sqrt{2}}{\sqrt{2}} + \sqrt{12 \times 3}$$

$$= \sqrt{9} + \sqrt{36}$$

$$= 3 + 6 = 9$$

2) عمل مايلي :

$$C = 7\sqrt{20} - 2\sqrt{45} + \sqrt{80}$$

$$= 7\sqrt{4 \times 5} - 2\sqrt{9 \times 5} + \sqrt{16 \times 5}$$

$$= 14\sqrt{5} - 6\sqrt{5} + 4\sqrt{5}$$

$$= \sqrt{5}(14 - 6 + 4)$$

$$= 12\sqrt{5}$$

$$D = 2\sqrt{12} + 2\sqrt{27} - 4\sqrt{3}$$

$$= 2\sqrt{4 \times 3} + 2\sqrt{9 \times 3} - 4\sqrt{3}$$

$$= 4\sqrt{3} + 6\sqrt{3} - 4\sqrt{3}$$

$$= 6\sqrt{3}$$

3) اجعل مقام الأعداد التالية أعدادا جذرية :

$$\frac{2}{\sqrt{5}} = \frac{2 \times \sqrt{5}}{\sqrt{5} \times \sqrt{5}} = \frac{2\sqrt{5}}{\sqrt{5}^2} = \frac{2\sqrt{5}}{5}$$

$$\frac{2}{2\sqrt{3}+\sqrt{5}} = \frac{2 \times (2\sqrt{3}-\sqrt{5})}{(2\sqrt{3}+\sqrt{5})(2\sqrt{3}-\sqrt{5})}$$

$$= \frac{4\sqrt{3}-2\sqrt{5}}{(2\sqrt{3})^2 - (\sqrt{5})^2} = \frac{4\sqrt{3}-2\sqrt{5}}{12-5}$$

$$= \frac{4\sqrt{3}-2\sqrt{5}}{7}$$

4) أ - أنشر وبسط :

$$(1+\sqrt{6})^2 = 1^2 + 2 \times 1 \times \sqrt{6} + \sqrt{6}^2$$

$$= 1 + 2\sqrt{6} + 6 = 7 + 2\sqrt{6}$$

$$(4-\sqrt{5})^2 = 4^2 - 2 \times 4 \times \sqrt{5} + \sqrt{5}^2$$

$$= 16 - 8\sqrt{5} + 5 = 21 - 8\sqrt{5}$$

ب - استنتج تبسيطا ل :

$$E = \sqrt{7+2\sqrt{6}} = \sqrt{(1+\sqrt{6})^2} = 1+\sqrt{6}$$

$$F = \sqrt{21-8\sqrt{5}} = \sqrt{(4-\sqrt{5})^2} = 4-\sqrt{5}$$

التمـــرين 2 :

1) أنشر ثم بسط مايلي :

$$H = (3x-2)(1+x)$$

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

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

$$G = 2x\left(\frac{x}{2} - \sqrt{3}\right) + (2x+\sqrt{5})(2x-\sqrt{5})$$

$$= x^2 - 2\sqrt{3}x + (2x)^2 - (\sqrt{5})^2$$

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

$$= 5x^2 - 2\sqrt{3}x - 5$$

2) عمل مايلي :

$$I = 3 - y^2 = \sqrt{3}^2 - y^2$$

$$= (\sqrt{3}-y)(\sqrt{3}+y)$$

$$K = \frac{y^2}{4} - y + 1$$

$$= \left(\frac{y}{2}\right)^2 - 2 \times \frac{y}{2} \times 1 + 1^2$$

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

$$J = (x+y)(x-2) + \sqrt{5}(\sqrt{5}x + \sqrt{5}y)$$

$$= (x+y)(x-2) + \sqrt{5} \times \sqrt{5}(x+y)$$

$$= (x+y)(x-2+5)$$

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

التمـــرين 3 :

1) بين أن : $(1 - 2^{-1})^{-3} = 8$

$$(1 - 2^{-1})^{-3} = \left(1 - \frac{1}{2}\right)^{-3} = \left(\frac{1}{2}\right)^{-3}$$

$$= \left(\frac{2}{1}\right)^3 = \frac{8}{1} = 8$$

$$\frac{\left(\frac{\sqrt{2}}{3}\right)^3 \times \left(\frac{3}{\sqrt{2}}\right)^5}{\left(\frac{3}{\sqrt{2}}\right)^4} = \frac{\left(\frac{3}{\sqrt{2}}\right)^{-3} \times \left(\frac{3}{\sqrt{2}}\right)^5}{\left(\frac{3}{\sqrt{2}}\right)^4}$$

$$= \frac{\left(\frac{3}{\sqrt{2}}\right)^{-3+5}}{\left(\frac{3}{\sqrt{2}}\right)^4} = \left(\frac{3}{\sqrt{2}}\right)^{2-4}$$

$$= \left(\frac{3}{\sqrt{2}}\right)^{-2} = \left(\frac{\sqrt{2}}{3}\right)^2 = \frac{2}{9}$$

2) أ - تحقق أن : $L = 2315 \times 10^{10}$

لدينا $L = 10^{-7} \times 0{,}002315 \times 10^{23}$

$$L = 10^{-7} \times 2315 \times 10^{-6} \times 10^{23}$$

$$L = 2315 \times 10^{-7-6+23}$$

$$L = 2315 \times 10^{10}$$

ب - اعط الكتابة العلمية للعدد L

$$L = 2315 \times 10^{10} = 2{,}315 \times 10^3 \times 10^{10}$$

$$L = 2{,}315 \times 10^{13}$$

التمـــرين 4 : (اضافي : 2+ points)

ليكن x عدد حقيقي موجب ، علما أن : $\sqrt{x+1} + \sqrt{x} = 5$

أحسب $\sqrt{x+1} - \sqrt{x}$

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

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

$$\left(\sqrt{x+1} + \sqrt{x}\right)\left(\sqrt{x+1} + \sqrt{x}\right) = 1$$

$$5 \times \left(\sqrt{x+1} + \sqrt{x}\right) = 1$$

$$\sqrt{x+1} + \sqrt{x} = \frac{1}{5}$$