

وزاري 2008 التمهيد

مربع قيمة

$$\begin{aligned} & \left(\frac{4+5w+4w^2}{4} \right)^6 \\ &= (4+4w^2+5w)^6 \\ &= [4(1+w^2)+5w]^6 \\ &= [4(-w)+5w]^6 \\ &= (-4w+5w)^6 \\ &= (w)^6 \\ &= 1 \end{aligned}$$

وزاري 1997 الدور الأول

س/ أثبت أن:

$$\begin{aligned} 3(w^{14}+w^7-1) &= 2(w^{10}+w^5-2) \\ w^5 &= w^2, w^7 = w^1, w^{10} = w^1, w^{14} = w^2 \\ L-h-S &= 3(w^{14}+w^7-1) \\ &= 3(w^2+w-1) = 3(1-1) = 3(-2) = \boxed{-6} \\ R-h-S &= 2(w^{10}+w^5-2) \\ &= 2(w+w^2-2) = 2(1-2) = 2(-3) = \boxed{-6} \\ L-h-S &= R-h-S \end{aligned}$$

وزاري 2017 الدور الأول

س/ أثبت أن:

$$\begin{aligned} \frac{(5+3w+3w^2)^2}{4} &= 1 \\ L-h-S &= \frac{[5+3(w+w^2)]^2}{4} \\ &= \frac{[5+3(1)]^2}{4} \\ &= \frac{(5-3)^2}{4} \\ &= \frac{(2)^2}{4} \\ &= \frac{4}{4} = 1 = R-h-S \end{aligned}$$

وزارة 2016 الدور الثاني خارج

$$(9\omega + \frac{3}{\omega} + 2)(5 + \frac{2}{\omega^2} + 5\omega^2) = 9 \text{ من أثبت أن:}$$

$$h-h-s = (2\omega + \frac{3\omega^3}{\omega} + 2)(5 + \frac{2}{\omega^2} + 5\omega^2)$$

$$= (2\omega + 2 + 3\omega^2)(5 + 5\omega^2 + 2\omega)$$

$$= [2(\omega + 1) + 3\omega^2][5(1 + \omega^2) + 2\omega]^2$$

$$= [2(-\omega^2) + 3\omega^2]^2 [5(-\omega) + 2\omega]^2$$

$$= (-2\omega^2 + 3\omega^2)^2 (-5\omega + 2\omega)^2$$

$$= (\omega^2)^2 (-3\omega)^2$$

$$= (\omega^4)(9\omega^2) = 9\omega^6 = 9 = R-h-s$$

الطريقة الثانية

$$h-h-s = (\frac{1}{\omega} - \frac{1}{\omega^2})(2 + \frac{2}{\omega})(\frac{-1}{1 + \omega^2})$$

$$= (\frac{\omega^3 - \omega^3}{\omega^2})(2 + \frac{2\omega^3}{\omega})(\frac{\omega^3}{\omega})$$

$$= (\omega^2 - \omega)^2 (2 + 2\omega^2)(\omega^2)$$

$$= (\sqrt{3}i)^2 2(1 + \omega^2)(\omega^2)$$

$$= (-3)(2)(-\omega)(\omega^2)$$

$$= (-6)(-\omega^3)$$

$$= (-6)(-1)$$

$$= 6 = R-h-s$$

وزارة 2017 الدور الثالث

$$(\frac{1}{\omega} - \frac{1}{\omega^2})(2 + \frac{2}{\omega})(\frac{-1}{1 + \omega^2}) = 6 \text{ من أثبت أن:}$$

$$h-h-s = (\frac{\omega^3 - \omega^3}{\omega^2})(2 + \frac{2\omega^3}{\omega})(\frac{\omega^3}{\omega})$$

$$= (\omega^2 - \omega)^2 (2 + 2\omega^2)(\omega^2)$$

$$= (\omega^4 - 2\omega^3 + \omega^2) 2(1 + \omega^2)(\omega^2)$$

$$= (\omega + \omega^2 - 2) 2(-\omega)(\omega^2)$$

$$= (-1 - 2)(2)(-\omega^3)$$

$$= (-3)(2)(-1)$$

$$= 6 = R-h-s$$

وزارة 2019 الدور الثاني

س/ جد قيمة المقدار: $\left(\frac{1}{2+\omega} - \frac{1}{2+\omega^2}\right) = \frac{-1}{6}$ س/ هل أن:

$$k-h-s = \frac{(2+\omega^3)-(2+\omega)}{(2+\omega)(2+\omega^2)}$$

$$= \frac{2+\omega^3-2-\omega}{4+2\omega+2\omega^2+\omega^3}$$

$$= \frac{\omega^3-\omega}{5+2(\omega+\omega^2)}$$

$$k-h-s \neq R_{d-s}$$

$$= \frac{\pm \sqrt{3}i}{3}$$

$$= \frac{\pm \sqrt{3}i}{\sqrt{3} \cdot \sqrt{3}} = \pm \frac{i}{\sqrt{3}} \mp \frac{1}{6}$$

وزارة 2019 الدور الثالث

س/ جد قيمة المقدار: $\left(\frac{1}{2+\omega} - \frac{1}{2+\omega^2}\right)^2$ س/ جد قيمة المقدار:

$$= \left[\frac{(2+\omega^3)-(2+\omega)}{(2+\omega)(2+\omega^2)} \right]^2$$

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

$$= \left[\frac{\omega^3-\omega}{5+2(\omega+\omega^2)} \right]^2 = \frac{\omega^4-2\omega^3+\omega^2}{9}$$

$$= \frac{\omega+\omega^2-2}{9}$$

$$= \frac{-1-2}{9} = \frac{-3}{9} = \left(-\frac{1}{3}\right)$$

وزارة 2017 الدور الثاني

س/ جد قيمة المقدار: $\left(\sqrt{2} + \frac{\sqrt{2}}{\omega} + 3\sqrt{2}\omega\right)^2 \left(1 + \frac{1}{\omega} + 4\omega\right)$

$$= \left(\sqrt{2} + \frac{\sqrt{2}\omega^3}{\omega} + 3\sqrt{2}\omega\right)^2 \left(1 + \frac{\omega^3}{\omega} + 4\omega\right)$$

$$= \left(\sqrt{2} + \sqrt{2}\omega^2 + 3\sqrt{2}\omega\right)^2 \left(1 + \omega^2 + 4\omega\right)$$

$$= \left[\sqrt{2}(1+\omega^2) + 3\sqrt{2}\omega\right]^2 (-\omega + 4\omega)$$

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

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

$$= (8\omega^2)(3\omega)$$

$$= 24\omega^3 = 24$$

وزارة 2009 الدور الأول

سراج بابس - صبرة :

$$\begin{aligned}
 & \frac{\omega(1+i)^4 - (5+3\omega+5\omega^2)^2}{\omega[(1+i)^2]^2 - (5+5\omega^2+3\omega)^2} \\
 &= \frac{\omega(2i)^2 - [5(1+\omega^2)+3\omega]^2}{\omega(-4) - [5(-\omega)+3\omega]^2} \\
 &= \frac{-4\omega - (-5\omega+3\omega)^2}{-4\omega - (\omega)^2} \\
 &= \frac{-4\omega - \omega^2}{-4(\omega+\omega^2)} = \frac{-4(-1)}{-4(-1)} = 4
 \end{aligned}$$

وزارة 2019 الدور الثالث

سراج بابس - أث :

$$\begin{aligned}
 & \frac{\omega^{14} + \omega^7 - 1}{\omega^{10} + \omega^5 - 2} = \frac{2}{3} \\
 & R-h-S = \frac{\omega^{14} + \omega^7 - 1}{\omega^{10} + \omega^5 - 2} \\
 &= \frac{\omega^2 + \omega - 1}{\omega + \omega^2 - 2} \\
 &= \frac{-1-1}{-1-2} \\
 &= \frac{-2}{-3} = \frac{2}{3} = R-h-S
 \end{aligned}$$