

2010 -
: 3 :

5	01	: (1)	حل التمرين 1
	01	: (2)	
	01	: (3)	
	01	: (4)	
	01	: (5)	

$$v_2 = \frac{-21}{4} ; v_1 = \frac{-7}{2} ; v_0 = \frac{-7}{3} ; u_2 = \frac{17}{8} ; u_1 = \frac{5}{4}$$

$$v_{n+1} = -2 u_{n+1} - 1 = -2 \left(\frac{3}{2} u_n + \frac{1}{4} \right) - 1 : (2)$$

$$v_{n+1} = -3 u_n - \frac{3}{2} = -3 \left(\frac{v_n - 1}{2} \right) - \frac{3}{2} = -\frac{3}{2} v_n$$

$$\cdot v_0 \quad \frac{-3}{2} \quad (v_n)$$

$$v_n = v_0 \times \left(\frac{-3}{2} \right)^n = \frac{-7}{3} \times \left(\frac{-3}{2} \right)^n : (3)$$

$$u_n = \frac{v_n - 1}{2} = -\frac{7}{6} \times \left(\frac{-3}{2} \right)^n - \frac{1}{2} :$$

$$: (4)$$

$$S_1 = v_0 + v_1 + v_2 + \dots + v_n = v_0 \frac{1 - q^{n+1}}{1 - q}$$

$$S_1 = \frac{-7}{3} \left[1 - \left(\frac{-3}{2} \right)^{n+1} \right] \times \frac{9}{5} = -\frac{14}{15} \left[1 - \left(\frac{-3}{2} \right)^{n+1} \right]$$

$$S_2 = \left(\frac{v_0 - 1}{2} \right) + \left(\frac{v_1 - 1}{2} \right) + \dots + \left(\frac{v_n - 1}{2} \right) = \frac{1}{2} (S_1) - \frac{1}{2} (n+1)$$

$$S_2 = \frac{-7}{15} \left[1 - \left(\frac{-3}{2} \right)^{n+1} \right] - \frac{1}{2} (n+1)$$

$$: (5)$$

$$P = v_0 \times v_1 \times \dots \times v_n = (v_0)^{n+1} \times \left(\frac{-3}{2} \right)^{1+2+\dots+n} = \left(\frac{-7}{3} \right)^{n+1} \times \left(\frac{-3}{2} \right)^{\frac{n(n+1)}{2}}$$

5	0,5 0,5 0,5 0,5	$Z' = \frac{x+(y-1)i}{x+(y+1)i} = \frac{x^2+y^2-1}{x^2+(y+1)^2} + i \frac{-2x}{x^2+(y+1)^2} :$ $Im(z') = \frac{-2x}{x^2+(y+1)^2} \quad Re(z') = \frac{x^2+y^2-1}{x^2+(y+1)^2} :$ <p style="text-align: right;">: E (2)</p> <p style="text-align: center;">Im(z') ≠ 0 و Re(z') = 0 : Z'</p> <p style="text-align: center;">x ≠ 0 و (x; y) ≠ (0; -1) و x² + y² = 1 :</p>	حل التمرين 2
	0,5 0,5 0,5 0,25 0,5 0,25	<p>A(0;-1) , B(0;1) 1 0 E</p> <p style="text-align: right;">: F (3)</p> <p>Im(z') > 0 Re(z') = Im(z') : arg(z') = $\frac{\pi}{4}$</p> <p style="text-align: center;">x < 0 (x+1)² + y² = 2 :</p> <p>x < 0 $\sqrt{2}$ ω(-1;0) F</p> <p style="text-align: right;">: Z = $\sqrt{3}$ (Z')²⁰¹⁰ (4)</p> <p style="text-align: center;">Z' = $\frac{1}{2} - \frac{\sqrt{3}}{2}i$: Z' = $\frac{\sqrt{3}-i}{\sqrt{3}+i}$:</p> <p>(Z')²⁰¹⁰ = $\left[1^{2010}; \frac{-2010\pi}{3} \right]$: Z' = $\left[1; \frac{-\pi}{3} \right]$:</p> <p style="text-align: center;">. (z')²⁰¹⁰ = 1 : (z')²⁰¹⁰ = [1; 0] :</p>	

10

0,5

$$g'(x) = 1 + \frac{1}{x} \quad : \quad g \quad (1 - I)$$

0,25

$$g'(x) > 0 \quad : \quad x > 0$$

0,25

$$]0 ; +\infty[\quad g$$

: (2)

1

$$\lim_{x \rightarrow +\infty} g(x) = +\infty \quad \lim_{x \rightarrow 0^+} g(x) = -\infty$$

: : g(x) (3)

0,5

x	0	1	$+\infty$
$g'(x)$		+	
$g(x)$	$-\infty$	\circ	$+\infty$

$$g(1) = 0 \quad :$$

0,5

$$g(x) < 0 \quad : \quad 0 < x < 1$$

$$g(x) = 0 \quad : \quad x = 1$$

$$g(x) > 0 \quad : \quad x > 1$$

: f (1-II)

0,5

$$f'(x) = \frac{1}{x^2} \ln x + \frac{x-1}{x} \cdot \frac{1}{x} = \frac{x-1+\ln x}{x^2} = \frac{g(x)}{x^2}$$

:

0,5

$$f \quad x \geq 1$$

$$f \quad 0 < x \leq 1$$

: (2)

1

$$\lim_{x \rightarrow +\infty} f(x) = +\infty$$

$$\lim_{x \rightarrow 0^+} f(x) = +\infty$$

1

x	0	1	$+\infty$
$f'(x)$		- 0 +	
$f(x)$	$+\infty$	\searrow 0 \nearrow	$+\infty$

0,5

$$f(x) = \frac{x-1}{x} \ln x = \left(1 - \frac{1}{x}\right) \ln x \quad : \quad (4)$$

0,5

$$f(x) = \ln x - \frac{1}{x} \ln x \quad :$$

0,5

$$h'(x) = \ln x + x \cdot \frac{1}{x-1} = \ln x \quad : \quad (5)$$

0,5

$$F(x) = x \ln x - x - \frac{1}{2} (\ln x)^2 \quad : \quad F \quad f$$

1

$$f(1) = 0 \quad f(x) \quad (6)$$

(7)

0,5

$$A = \int_1^e f(x) dx = [F(e) - F(1)] \text{ u.a.} \quad :$$

0,5

$$. \quad A = -\frac{1}{2} + 1 = \frac{1}{2} \text{ u.a.} \quad :$$

