

$$Z = (x^2 + 20) + i(x^2 + y - 1) = 0 \quad \boxed{1}$$

$$\Rightarrow \bullet x^2 + x = 0 \Rightarrow x(x+1) = 0$$

$$\Rightarrow \text{ا) } x = 0 \quad \text{ب) } x = -1$$

$$\text{ا) } \bullet x^2 + y - 1 = 0$$

$$\text{ا) } x = 0 \Rightarrow y = 1$$

$$\text{ب) } x = -1 \Rightarrow y = 0$$

الاجابة **A**

$$\left( \frac{1+i}{1-i} \right)^{4n} = ? \quad \boxed{2}$$

$$\left[ \left( \frac{1+i}{1-i} \right)^4 \right]^n = \left[ \left( \frac{|1+i|^2}{|1-i|^2} \right)^2 \right]^n \quad \underline{\underline{1b}}$$

$$= \left[ \left( \frac{(1+i)^2}{(1-i)^2} \right)^2 \right]^n = \left[ \left( \frac{2i}{-2i} \right)^2 \right]^n$$

$$= \left[ (-1)^2 \right]^n = [1]^n = 1$$

$$1+i = \sqrt{2} \left( \cos\left(\frac{\pi}{4}\right) + i \sin\left(\frac{\pi}{4}\right) \right) \quad \underline{\underline{2b}}$$

$$1-i = \sqrt{2} \left( \cos\left(-\frac{\pi}{4}\right) + i \sin\left(-\frac{\pi}{4}\right) \right)$$

$$\left( \frac{1+i}{1-i} \right)^{4n} = \left[ \frac{\sqrt{2} \left( \cos\left(\frac{\pi}{4}\right) + i \sin\left(\frac{\pi}{4}\right) \right)}{\sqrt{2} \left( \cos\left(-\frac{\pi}{4}\right) + i \sin\left(-\frac{\pi}{4}\right) \right)} \right]^{4n}$$

$$= \left[ \cos\left(\frac{\pi}{2}\right) + i \sin\left(\frac{\pi}{2}\right) \right]^{4n}$$

$$= \cos(2n\pi) + i \sin(2n\pi)$$

$$= 1$$

عوضاً

$$\left[ \frac{1-i}{\sqrt{2}} \right]^{2008} = ? \quad \boxed{3}$$

$$= \frac{(1-i)^{2008}}{(\sqrt{2})^{2008}} = \frac{((1-i)^2)^{1004}}{((\sqrt{2})^2)^{1004}} = \left[ \frac{-2i}{2} \right]^{1004}$$

$$= (-i)^{1004} = (-i)^{2 \cdot 502} = (-1)^{502} = 1 \in \mathbb{R}$$

إذاً النتيجة 1  
عوضاً  $\boxed{A}$

$$w = z - u$$

$$\bar{w} = \frac{1+\bar{z} \cdot u}{\bar{z} - u} = \frac{1}{\bar{z}} - \frac{1}{u} = \frac{u - z}{u \cdot z} \quad \boxed{4}$$

$$\bar{w} = \frac{u - z}{1 + \bar{z} \cdot u} = - \left( \frac{z - u}{1 + \bar{z} \cdot u} \right) = -w$$

النتيجة -w

$$\frac{z+1}{z-1} = 2i \quad [5]$$

$$z-1$$

$$\Rightarrow z+1 = 2i(z-1)$$

$$\Rightarrow z+1 = 2iz - 2i$$

$$\Rightarrow z - 2iz = -2i - 1$$

$$\Rightarrow z(1-2i) = -2i-1$$

$$\Rightarrow z = \frac{-2i-1}{1-2i} = \frac{(1+2i)(-1-2i)}{(2i-1)(-1-2i)}$$

$$z = \frac{3-4i}{5} = \frac{3}{5} - \frac{4}{5}i$$

الجاب (C)

$$(3-4i)z^2 = i z \quad (6)$$

$$\Rightarrow (3-4i)z^2 - i z = 0$$

$$\Rightarrow z((3-4i)z - i) = 0$$

$$| z = 0 \text{ , } | (3-4i)z - i = 0$$

$$\Rightarrow z = \frac{i}{3-4i} = \frac{4}{25} + \frac{3}{25}i$$

الجاب (C)

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