

تساوي عددين مركبين

أيجاد قيم $x, y \in \mathbb{R}$

* نتخلص من:

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* بعد التخلص عملنا على معادلة

$$x + yi = a + bi$$

نأخذ حقيقيين = حقيقيين $x = a$

نأخذ تخيليين = تخيليين $y = b$

$$\textcircled{1} (2x-3) + 5i = 7 + (3-2y)i$$

$$\begin{array}{l|l} 2x-3=7 & 5=3-2y \\ 2x=7+3 & 2y=3-5 \\ 2x=10 & 2y=-2 \\ \underline{2} & \underline{2} \\ x=5 & y=-1 \end{array}$$

$$\textcircled{2} 2x-1+2i = 1+(1+y)i$$

$$\begin{array}{l|l} 2x-1=1 & 1+y=2 \\ 2x=1+1 & y=2-1 \\ 2x=2 & y=1 \\ \underline{2} & \underline{2} \\ x=1 & y=1 \end{array}$$

$$\textcircled{3} x+yi = \sqrt{4} + i^{22}$$

$$x+yi = \sqrt{4} \cdot \sqrt{1} + i^2$$

$$x+yi = 2i - 1$$

$$x+yi = -1 + 2i$$

$$x=-1 \quad y=2$$

$$\textcircled{4} \sqrt{25} + i^{18} = x+yi$$

$$\sqrt{25} \cdot \sqrt{1} + i^2 = x+yi$$

$$+5i - 1 = x+yi$$

$$-1 + 5i = x+yi$$

$$x=-1 \quad y=5$$

$$\textcircled{5} y + xi = 13 + 0i$$

$$y=13 \quad x=0$$

$$\textcircled{6} 3x - yi = 22i$$

$$3x - yi = 0 + 22i$$

$$3x = 0 \quad -y = 22 \quad \cdot -1$$

$$x=0 \quad y=-22$$

$$\textcircled{7} 9 + xi = 34 - 2i$$

$$9 + xi = 34 - 2i$$

$$y=9 \quad x=-2$$

س/ ج قيمة $x, y \in \mathbb{R}$ اذا علمت:

$$\textcircled{1} x+yi = 3+4i$$

$$x=3 \quad y=4$$

$$\textcircled{2} x+5i = 4+4i$$

$$x=4 \quad y=5$$

$$\textcircled{3} 3+xi = y-2i$$

$$y=3 \quad x=-2$$

وزارة 2016 ت

$$\textcircled{3} \frac{125}{11+2i} x + (1-i)y = 11$$

$$\left(\frac{125}{11+2i} \cdot \frac{11-2i}{11-2i} \right) x + (-2i)y = 11$$

$$\frac{125(11-2i)}{125} x - 2iy = 11$$

$$11x - 2ix - 2iy = 11 + 0i$$

$$11x = 11 \Rightarrow x = 1$$

$$2x - 2y = 0 \Rightarrow -2$$

$$x + y = 0 \Rightarrow \textcircled{1}$$

$$1 + y = 0 \Rightarrow y = -1$$

$$\textcircled{12} \left(\frac{1+i}{1-i} \right)^3 + (2x-yi) = (1+2i)^2$$

$$\left(\frac{1+i}{1-i} \cdot \frac{1+i}{1-i} \right)^3 + (2x-yi) = (1+4i-4)$$

$$\left(\frac{1+i-i-1}{2} \right)^3 + (2x-yi) = (-3+4i)$$

$$1 + 2x - yi = -3 + 4i$$

$$-1 + 2x - yi = -3 + 4i$$

$$2x - yi = -3 + 5i$$

$$\frac{2}{2}x = \frac{-3}{2} \quad -y = 5 \Rightarrow -1$$

$$x = -\frac{3}{2}$$

$$y = -5$$

وزارة 2015 ت

$$\textcircled{11} \frac{1-i}{1+i} + (x+yi) = (1+2i)^2$$

$$\left(\frac{1-i}{1+i} \cdot \frac{1-i}{1-i} \right) + (x+yi) = (1+4i-4)$$

$$\frac{1-i-i-1}{2} + (x+yi) = (-3+4i)$$

$$-1 + (x+yi) = -3 + 4i$$

$$x+yi = -3 + 4i + 1$$

$$x+yi = -3 + 5i$$

$$x = -3 \quad y = 5$$

$$\frac{6}{x+yi} = \frac{(-1-i)}{1}$$

$$\frac{(-1-i)(x+yi)}{-1-i} = \frac{6}{-1-i} \cdot \frac{-1+i}{-1+i}$$

$$x+yi = \frac{-6+6i}{2}$$

$$x+yi = -\frac{6}{2} + \frac{6}{2}i$$

$$x+yi = -3+3i$$

$$x = -3$$

$$y = 3$$

فازي 2021 دور 2

$$(15) \frac{6}{x+yi} - \frac{3+i}{2-i} = (1-i)^3$$

$$\frac{6}{x+yi} - \frac{(3+i)(2+i)}{(2-i)(2+i)} = (1-i)(1-i)$$

$$\frac{6}{x+yi} - \frac{(6+3i+2i-1)}{5} = -2i(1-i)$$

$$\frac{6}{x+yi} - \frac{(5+5i)}{5} = -2i-2$$

$$\frac{6}{x+yi} - (1+i) = (-2-2i)$$

$$\frac{6}{x+yi} = (-2-2i) + (1+i)$$

$$\frac{6}{x+yi} = \frac{(1+i)}{1}$$

$$\frac{(1+i)(x+yi)}{1+i} = \frac{6}{1+i} \cdot \frac{-1-i}{-1-i}$$

$$x+yi = \frac{6-6i}{2}$$

$$x+yi = \frac{6}{2} - \frac{6}{2}i$$

$$x+yi = 3-3i$$

$$x = 3$$

$$y = -3$$

مسألة جبرية $x, y \in \mathbb{R}$ اذا علمت:

فازي 2019 دور 1

$$(14) \frac{6}{x+yi} + (2-i)^2 = 4-3i$$

$$\frac{6}{x+yi} + (4-4i-1) = 4-3i$$

$$\frac{6}{x+yi} + (3-4i) = (4-3i)$$

$$\frac{6}{x+yi} = (4-3i) - (3-4i)$$

$$\frac{6}{x+yi} = 4-3i-3+4i$$