

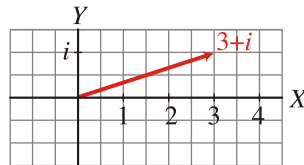
OPERAR CON COMPLEJOS EN FORMA BINÓMICA

EJERCICIO 1 : Calcula y representa gráficamente la solución que obtengas:

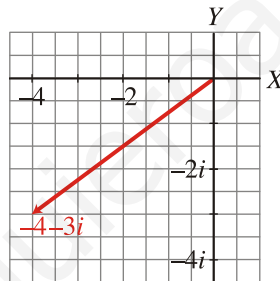
a) $\frac{(4-2i)i^5}{1+i}$ b) $\frac{5i^6(-2+i)}{-1+2i}$ c) $\frac{i^{30}(5-i)}{-1+i}$ d) $\frac{5i^9(2-3i)}{2-i}$

Solución:

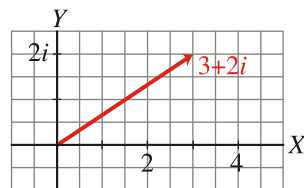
$$\begin{aligned} \text{a) } \frac{(4-2i)i^5}{1+i} &= \frac{(4-2i)i}{1+i} = \frac{4i-2i^2}{1+i} = \frac{4i+2}{1+i} = \frac{2+4i}{1+i} = \frac{(2+4i)(1-i)}{(1+i)(1-i)} = \frac{2-2i+4i-4i^2}{1-i^2} = \frac{2-2i+4i+4}{1+1} = \\ &= \frac{6+2i}{2} = \frac{6}{2} + \frac{2i}{2} = 3+i \end{aligned}$$



$$\begin{aligned} \text{b) } \frac{5i^6(-2+i)}{-1+2i} &= \frac{5(-1)(-2+i)}{-1+2i} = \frac{-5(-2+i)}{-1+2i} = \frac{-5(-2+i)(-1-2i)}{(-1+2i)(-1-2i)} = \frac{-5(2+4i-i-2i^2)}{1-4i^2} = \\ &= \frac{-5(2+4i-i+2)}{1+4} = \frac{-5(4+3i)}{5} = -4-3i \end{aligned}$$



$$\begin{aligned} \text{c) } \frac{i^{30}(5-i)}{-1+i} &= \frac{-1(5-i)}{-1+i} = \frac{-5+i}{-1+i} = \frac{(-5+i)(-1-i)}{(-1+i)(-1-i)} = \frac{5+5i-i-i^2}{1-i^2} = \frac{5+5i-i+1}{1+1} = \frac{6+4i}{2} = \frac{6}{2} + \frac{4i}{2} = 3+2i \end{aligned}$$



$$\begin{aligned} \text{d) } \frac{5i^9(2-3i)}{2-i} &= \frac{5i(2-3i)}{2-i} = \frac{10i-15i^2}{2-i} = \frac{10i+15}{2-i} = \frac{15+10i}{2-i} = \frac{(15+10i)(2+i)}{(2-i)(2+i)} = \frac{30+15i+20i+10i^2}{4-i^2} = \\ &= \frac{30+15i+20i-10}{4+1} = \frac{20+35i}{5} = \frac{20}{5} + \frac{35i}{5} = 4+7i \end{aligned}$$

