OPERAR CON COMPLEJOS EN FORMA BINÓMICA

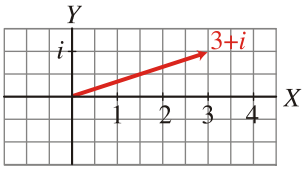
EJERCICIO 1 : Calcula y representa gráficamente la solución que obtengas:

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

Solución:

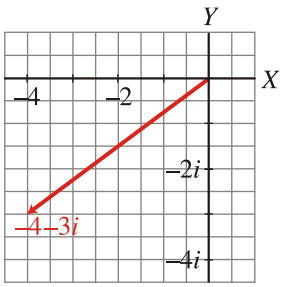
a) $\dfrac{(4-2i)i^5}{1+i}=\dfrac{(4-2i)i}{1+i}=\dfrac{4i-2i^2}{1+i}=\dfrac{4i+2}{1+i}=\dfrac{2+4i}{1+i}=\dfrac{(2+4i)(1-i)}{(1+i)(1-i)}=\dfrac{2-2i+4i-4i^2}{1-i^2}=\dfrac{2-2i+4i+4}{1+1}=$

$=\dfrac{6+2i}{2}=\dfrac{6}{2}+\dfrac{2i}{2}=3+i$

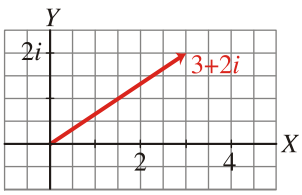


b) $\dfrac{5i^6(-2+i)}{-1+2i}=\dfrac{5(-1)(-2+i)}{-1+2i}=\dfrac{-5(-2+i)}{-1+2i}=\dfrac{-5(-2+i)(-1-2i)}{(-1+2i)(-1-2i)}=\dfrac{-5(2+4i-i-2i^2)}{1-4i^2}=$

$=\dfrac{-5(2+4i-i+2)}{1+4}=\dfrac{-5(4+3i)}{5}=-4-3i$



c) $\dfrac{i^{30}(5-i)}{-1+i}=\dfrac{-1(5-1)}{-1+i}=\dfrac{-5+i}{-1+i}=\dfrac{(-5+i)(-1-i)}{(-1+i)(-1-i)}=\dfrac{5+5i-i-i^2}{1-i^2}=\dfrac{5+5i-i+1}{1+1}=\dfrac{6+4i}{2}=\dfrac{6}{2}+\dfrac{4i}{2}=3+2i$



d) $\dfrac{5i^9(2-3i)}{2-i}=\dfrac{5i(2-3i)}{2-i}=\dfrac{10i-15i^2}{2-i}=\dfrac{10i+15}{2-i}=\dfrac{15+10i}{2-i}=\dfrac{(15+10i)(2+i)}{(2-i)(2+i)}=\dfrac{30+15i+20i+10i^2}{4-i^2}=$

$=\dfrac{30+15i+20i-10}{4+1}=\dfrac{20+35i}{5}=\dfrac{20}{5}+\dfrac{35i}{5}=4+7i$