1. **Efectúa las siguientes operaciones y simplifica el resultado:**

a) $(6 - 5i) + (2 - i) - 2(-5 + 6i)$

b) $(2 - 3i) - (5 + 4i) + (1/2)(6 - 4i)$

c) $(3 + 2i)(4 - 2i)$

d) $(2 + 3i)(5 - 6i)$

e) $(-i + 1)(3 - 2i)(1 + 3i)$

f) $\dfrac{2 + 4i}{4 - 2i}$

g) $\dfrac{1 - 4i}{3 + i}$

h) $\dfrac{4 + 4i}{-3 + 5i}$

i) $\dfrac{5 + i}{-2 - i}$

j) $\dfrac{1 + 5i}{3 + 4i}$

k) $\dfrac{4 - 2i}{i}$

l) $6 - 3\left(5 + \dfrac{2}{5}i\right)$

m) $\dfrac{3i(-4i + 2)}{-2 + 3i}$

n) $\dfrac{(-3i)^2(1 - 2i)}{2 + 2i}$

a) $(6 - 5i) + (2 - i) - 2(-5 + 6i) = 6 - 5i + 2 - i + 10 - 12i =$ **$18 - 18i$**

b) $(2 - 3i) - (5 + 4i) + (1/2)(6 - 4i) = 2 - 3i - 5 - 4i + 3 - 2i =$ **$-9i$**

c) $(3 + 2i)(4 - 2i) = 12 - 6i + 8i - 4i^2 = 12 + 2i + 4 =$ **$16 + 2i$**

d) $(2 + 3i)(5 - 6i) = 10 - 12i + 15i - 18i^2 = 10 + 3i + 18 =$ **$28 + 3i$**

e) $(-i + 1)(3 - 2i)(1 + 3i) = (-3i + 2i^2 + 3 - 2i)(1 + 3i) = (3 - 2 - 5i)(1 + 3i) = (1 - 5i)(1 + 3i) = 1 + 3i - 5i - 15i^2 = 1 + 15 - 2i =$ **$16 - 2i$**

f) $\dfrac{2+4i}{4-2i} = \dfrac{(2+4i)(4+2i)}{(4-2i)(4+2i)} = \dfrac{8+4i+16i+8i^2}{4^2-(2i)^2} = \dfrac{8+20i+8\cdot(-1)}{16-4\cdot(-1)} = \dfrac{8+20i-8}{16+4} = \dfrac{20i}{20} =$ **i**

g) $\dfrac{1-4i}{3+i} = \dfrac{(1-4i)\cdot(3-i)}{(3+i)\cdot(3-i)} = \dfrac{3-i-12i+4i^2}{3^2-i^2} = \dfrac{3-13i+4\cdot(-1)}{9-(-1)} = \dfrac{3-13i-4}{9+1} = \dfrac{-1-13i}{10} =$ **$(-1/10)-(13/10)i$**

h) $\dfrac{4+4i}{-3+5i} = \dfrac{(4+4i)\cdot(-3-5i)}{(-3+5i)\cdot(-3-5i)} = \dfrac{-12-20i-12i-20i^2}{(-3)^2-(5i)^2} = \dfrac{-12-32i-20\cdot(-1)}{9-25(-1)} = \dfrac{8-32i}{34} = \dfrac{4}{17} - \dfrac{16}{17}i$

i) $\dfrac{5+i}{-2-i} = \dfrac{(5+i)\cdot(-2+i)}{(-2-i)\cdot(-2+i)} = \dfrac{-10+5i-2i+i^2}{(-2)^2-i^2} = \dfrac{-10+3i-1}{4-(-1)} = \dfrac{-11+3i}{5} = -\dfrac{11}{5} + \dfrac{3}{5}i$

j) $\dfrac{1+5i}{3+4i} = \dfrac{(1+5i)\cdot(3-4i)}{(3+4i)\cdot(3-4i)} = \dfrac{3-4i+15i-20i^2}{3^2-(4i)^2} = \dfrac{3+11i-20(-1)}{9-16(-1)} = \dfrac{3+11i+20}{9+16} = \dfrac{23}{25} + \dfrac{11}{25}i$

k) $\dfrac{4-2i}{i} = \dfrac{(4-2i)\cdot i}{i^2} = \dfrac{4i-2i^2}{-1} = -2-4i$

l) $6 - 3\left(5 + \dfrac{2}{5}i\right) = 6 - 15 - \dfrac{6}{5}i = -9 - \dfrac{6}{5}i$

m) $\dfrac{3i(-4i+2)}{-2+3i} = \dfrac{(-12i^2+6i)\cdot(-2-3i)}{(-2+3i)\cdot(-2-3i)} = \dfrac{-24-36i-12i-18i^2}{(-2)^2-(3i)^2} = \dfrac{-24-48i-18(-1)}{4-9(-1)} = \dfrac{-6}{13} - \dfrac{48}{13}i$

n) $\dfrac{(-3i)^2(1-2i)}{2+2i} = \dfrac{-9(1-2i)\cdot(2-2i)}{(2+2i)\cdot(2-2i)} = \dfrac{(-9+18i)(2-2i)}{2^2-(2i)^2} = \dfrac{-18+18i+36i+36}{4-4(-1)} = \dfrac{18+54i}{16} = \dfrac{9}{8} + \dfrac{27}{8}i$