(14) a) $3(-1+4i) - 2(7-i) =$

$-3+12i - 14+2i = \underline{\underline{-17+14i}}$

b) $(3+2i)(2-i) =$

$6 - 3i + 4i + 2 = \underline{\underline{8+i}}$

c) $(i-2)[2(1+i) - 3(i-1)] =$

$(i-2)[2+2i-3i+3] =$

$(i-2)(5-1i) =$

$5i + i^2 - 10 + 2i = \underline{\underline{-10+8i}}$

$(i-2)\ [2+2i-3i+3]$

$(-2+i)\ (5-i)$

$-10+2i+5i+1 = \underline{\underline{-9+7i}}$

d) $\frac{2-3i}{4-i} = \frac{2-3i}{4-i} \cdot \frac{4+i}{4+i} = \frac{8+2i-12i+3}{17}$

$= \frac{11-10i}{17}$

bzw

$= \frac{11}{17} - \frac{10}{17}i$

$(4-i)(4+i)$

$16+4i-4i+1 = 17$

e) $(4+i)(3+2i)(1-i) = (4-4i+i+1)(3+2i) =$

$(5-3i)(3+2i) = 15+10i-9i+6 = \underline{\underline{21+i}}$

Mathe fouls. (14)

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f) $\frac{(2+i)(3-2i)(1+2i)}{(1-i)^2} = \frac{(6-4i+3i+2)(1+2i)}{(1-i)(1-i)} =$

$= \frac{(8-i)(1+2i)}{(1-i-i-1)} = \frac{8+16i-i+2}{0-2i} = \frac{10+15i}{0-2i}$

$= \frac{10+15i}{0-2i} \cdot \frac{0+2i}{0+2i} = \frac{0+20i+0-30}{4} = -\frac{30+20i}{4}$

$= -7\frac{1}{2} + 5i$

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

$(-3-4i)(2+2i+\frac{7}{2}-\frac{3}{2}i) =$

$(-3-4i)(2,5+0,5i) =$

$-7,5-1,5i-10i+2 =$

$-5\frac{1}{2} - 11,5i$

$(2i-1)(2i-1)$

$-4-2i-2i+1$

$-3-4i$

$\frac{4}{1-i} \cdot \frac{1+i}{1+i} = \frac{4+4i}{1+i-i+1}$

$= \frac{4+4i}{2} = 2+2i$

$\frac{2-i}{1+i} \cdot \frac{1-i}{1-i} = \frac{2-2-i-1}{1-i+i+1}$

$= \frac{1-3i}{2} = \frac{1}{2} - \frac{3}{2}i$

h) $\frac{i^4+i^9+i^{16}}{2-i^5+i^{10}-i^{15}} = \frac{1+i+1}{2-i-1+i}$

$= \frac{2+i}{1} = 2+i$

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

$3i^2 - 2(-i)^3 =$

$-3 + 2i^3 =$

$-3-2i$

$\frac{1+i}{1-i} \cdot \frac{1+i}{1+i} = \frac{1+i+i-1}{1+i-i+1}$

$= \frac{2i}{2} = i$

$\frac{1-i}{1+i} \cdot \frac{1-i}{1-i} = \frac{1-i-i-1}{1-i+i+1}$

$= \frac{-2i}{2} = -i$