

$$\begin{aligned}
 1) \quad & (3-2i)^2 \cdot [(2-4i)(2+4i) \cdot i] \\
 & (9-12i+4i^2) \cdot [12^2-4^2i^2] \cdot i \\
 & (5-12i) \cdot 20i = 100i - 240i^2 \\
 & = 240 + 100i
 \end{aligned}$$

↙ ↘ Kleines R

$$\sqrt{240^2 + 100^2} = \sqrt{67600}$$

$$\alpha = \arccos \frac{100}{240} + 0\pi = \arccos \frac{5}{12}$$

$$\begin{aligned}
 2) \quad & \frac{3+2i}{4-i} + \frac{-17-3i}{2i-3} = \frac{(2i-3)(2i+3) - 3(4+i)(4-i)}{(4-i)(2i-3)} \\
 & \frac{4i^2 - 9 - 3(16-i^2)}{8i - 12 - 2i^2 + 3i} = \frac{-13 - 3 \cdot 17}{11i - 10} = \frac{-64}{11i - 10} \\
 & \frac{-64}{11i - 10} \cdot \frac{11i + 10}{11i + 10} = \frac{-704i - 640}{(11i)^2 - 10^2} = \frac{-704i - 640}{-221}
 \end{aligned}$$

$$2) \quad \frac{640}{221} + \frac{704}{221}i \quad \rightarrow \quad r = \sqrt{\frac{640^2 + 704^2}{221^2}}$$

$$\frac{\frac{704}{221}}{\frac{640}{221}} = \frac{704}{221} \cdot \frac{221}{640} \quad \rightarrow \quad \alpha = \arctan \frac{704}{640} + 0\pi$$

$$3) \quad (2+i)^4 \cdot 2i - [(8i-2) \cdot (-4)]$$

$$\begin{aligned} & \underline{1} \underline{2^4} \underline{i^0} + \underline{4} \underline{2^3} \underline{i^1} + \underline{6} \underline{2^2} \underline{i^2} + \underline{4} \underline{2^1} \underline{i^3} + \underline{1} \underline{2^0} \underline{i^4} \\ & 16 + 32i - 24 - 8i + 1 \\ & (-7 + 24i) \cdot 2i - (-32i + 8) \\ & -14i - 48 + 32i - 8 = 18i - 56 \end{aligned}$$

$$r = \sqrt{18^2 + 56^2}$$

$$\alpha = \arctan \frac{9}{28} + \pi$$

Pascal'sche Dreieck $(a+b)^n$

n											
↓											
0				1							
1			1	+	1						
2		1	+	2		1					
3		1	+	3		3		1			
4	1		4		6		4	1 ←			
5	1		5		10		10		5		1

Koeffizientenstruktur $(2-3i)^4$

1. Koeffizienten : $1 \cdot 2^4 (3i)^0 - 4 \cdot 2^3 (3i)^1 + 6 \cdot 2^2 (3i)^2 - 4 \cdot 2^1 (3i)^3 + 1 \cdot 2^0 (3i)^4$
16 - 96i - 216 + 216i + 81

2. Linke Variable : Links mit EXP - σ

3. rechte Variable : rechts mit EXP - σ -119 + 120i