

Complexe getallen voorstellen in het complexe vlak

Oefening 1.

1. $z_1 = 3 + 4i$ Polaire vorm: $5 \left(\cos \left(\tan^{-1} \left(\frac{4}{3} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{4}{3} \right) \right) \right)$
2. $z_2 = 5 \left(\cos \left(\frac{\pi}{4} \right) + i \sin \left(\frac{\pi}{4} \right) \right)$ Cartesische vorm: $3 + 4i$
3. $z_3 = -2 + i$ Polaire vorm: $\sqrt{5} \left(\cos \left(\tan^{-1} \left(\frac{-1}{2} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{-1}{2} \right) \right) \right)$
4. $z_4 = \sqrt{5} \left(\cos \left(\tan^{-1} \left(\frac{-1}{2} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{-1}{2} \right) \right) \right)$ Cartesische vorm: $-2 + i$
5. $z_5 = 5$ Polaire vorm: $5(\cos(0) + i \sin(0))$
6. $z_6 = 5(\cos(0) + i \sin(0))$ Cartesische vorm: 5
7. $z_7 = -3 - 4i$ Polaire vorm: $5 \left(\cos \left(\pi + \tan^{-1} \left(\frac{4}{3} \right) \right) + i \sin \left(\pi + \tan^{-1} \left(\frac{4}{3} \right) \right) \right)$
8. $z_8 = 5 \left(\cos \left(\pi + \tan^{-1} \left(\frac{4}{3} \right) \right) + i \sin \left(\pi + \tan^{-1} \left(\frac{4}{3} \right) \right) \right)$ Cartesische vorm: $-3 - 4i$
9. $z_9 = 2 - 2i$ Polaire vorm: $2\sqrt{2} \left(\cos \left(\frac{-\pi}{4} \right) + i \sin \left(\frac{-\pi}{4} \right) \right)$
10. $z_{10} = 2\sqrt{2} \left(\cos \left(\frac{-\pi}{4} \right) + i \sin \left(\frac{-\pi}{4} \right) \right)$ Cartesische vorm: $2 - 2i$

Oefening 2.

1. $z_1 = 1 + i$ Polaire vorm: $\sqrt{2} \left(\cos \left(\frac{\pi}{4} \right) + i \sin \left(\frac{\pi}{4} \right) \right)$
2. $z_2 = \sqrt{2} \left(\cos \left(\frac{\pi}{4} \right) + i \sin \left(\frac{\pi}{4} \right) \right)$ Cartesische vorm: $1 + i$
3. $z_3 = -1$ Polaire vorm: $1(\cos(\pi) + i \sin(\pi))$
4. $z_4 = 1(\cos(\pi) + i \sin(\pi))$ Cartesische vorm: -1
5. $z_5 = 0 + 5i$ Polaire vorm: $5 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$
6. $z_6 = 5 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$ Cartesische vorm: $0 + 5i$
7. $z_7 = -4 + 0i$ Polaire vorm: $4(\cos(\pi) + i \sin(\pi))$
8. $z_8 = 4(\cos(\pi) + i \sin(\pi))$ Cartesische vorm: $-4 + 0i$
9. $z_9 = 3i$ Polaire vorm: $3 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$
10. $z_{10} = 3 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$ Cartesische vorm: $3i$

Oefening 3.

1. $z_1 = 4 + 0i$ Polaire vorm: $4(\cos(0) + i \sin(0))$
2. $z_2 = 2 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$ Cartesische vorm: $0 + 2i$
3. $z_3 = 0 + 2i$ Polaire vorm: $2 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$
4. $z_4 = 4(\cos(0) + i \sin(0))$ Cartesische vorm: $4 + 0i$
5. $z_5 = -2 - 3i$ Polaire vorm: $\sqrt{13} \left(\cos \left(\pi + \tan^{-1} \left(\frac{3}{2} \right) \right) + i \sin \left(\pi + \tan^{-1} \left(\frac{3}{2} \right) \right) \right)$
6. $z_6 = \sqrt{13} \left(\cos \left(\pi + \tan^{-1} \left(\frac{3}{2} \right) \right) + i \sin \left(\pi + \tan^{-1} \left(\frac{3}{2} \right) \right) \right)$ Cartesische vorm: $-2 - 3i$
7. $z_7 = 1 - 3i$ Polaire vorm: $\sqrt{10} \left(\cos \left(\tan^{-1} \left(\frac{-3}{1} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{-3}{1} \right) \right) \right)$
8. $z_8 = \sqrt{10} \left(\cos \left(\tan^{-1} \left(\frac{-3}{1} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{-3}{1} \right) \right) \right)$ Cartesische vorm: $1 - 3i$
9. $z_9 = 2 + 0i$ Polaire vorm: $2(\cos(0) + i \sin(0))$
10. $z_{10} = 2(\cos(0) + i \sin(0))$ Cartesische vorm: $2 + 0i$

Oefening 4.

1. $z_1 = -1 + 0i$ Polaire vorm: $1(\cos(\pi) + i \sin(\pi))$

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2. $z_2 = \sqrt{20} \left(\cos \left(\tan^{-1} \left(\frac{2}{-4} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{2}{-4} \right) \right) \right)$ Cartesische vorm: $-4 + 2i$
3. $z_3 = -4 + 2i$ Polaire vorm: $\sqrt{20} \left(\cos \left(\tan^{-1} \left(\frac{2}{-4} \right) \right) + i \sin \left(\tan^{-1} \left(\frac{2}{-4} \right) \right) \right)$
4. $z_4 = 1 (\cos(\pi) + i \sin(\pi))$ Cartesische vorm: $-1 + 0i$
5. $z_5 = 0 + 4i$ Polaire vorm: $4 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$
6. $z_6 = 4 \left(\cos \left(\frac{\pi}{2} \right) + i \sin \left(\frac{\pi}{2} \right) \right)$ Cartesische vorm: $0 + 4i$
7. $z_7 = 3 + 0i$ Polaire vorm: $3 (\cos(0) + i \sin(0))$
8. $z_8 = 3 (\cos(0) + i \sin(0))$ Cartesische vorm: $3 + 0i$
9. $z_9 = -5 + 5i$ Polaire vorm: $5\sqrt{2} \left(\cos \left(\frac{3\pi}{4} \right) + i \sin \left(\frac{3\pi}{4} \right) \right)$
10. $z_{10} = 5\sqrt{2} \left(\cos \left(\frac{3\pi}{4} \right) + i \sin \left(\frac{3\pi}{4} \right) \right)$ Cartesische vorm: $-5 + 5i$