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1. $z = 5 + 5i$

• $R = \sqrt{5^2 + 5^2}$
 $= \sqrt{25 + 25} = \sqrt{50} = 5\sqrt{2}$ ✓

• $\begin{cases} \cos \theta = \frac{5}{5\sqrt{2}} = \frac{\sqrt{2}}{2} \\ \sin \theta = \frac{5}{5\sqrt{2}} = \frac{\sqrt{2}}{2} \end{cases}$ donc $\theta = \frac{\pi}{4}$ ✓

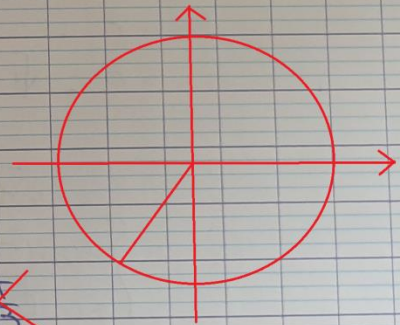
• $z = 5\sqrt{2} \left(\cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right)$ ✓

2. $z = -3 - 3\sqrt{3}i$

• $R = \sqrt{(-3)^2 + (-3\sqrt{3})^2}$
 $= \sqrt{9 + 27} = \sqrt{36} = 6$ ✓

• $\begin{cases} \cos \theta = \frac{-3}{6} = -\frac{1}{2} \\ \sin(\theta) = \frac{-3\sqrt{3}}{6} = -\frac{\sqrt{3}}{2} \end{cases}$ donc $\theta = -\frac{\pi}{3}$

• $z = 6 \left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3} \right)$ $\xrightarrow{-2\pi}$ $\frac{-2\pi}{3}$

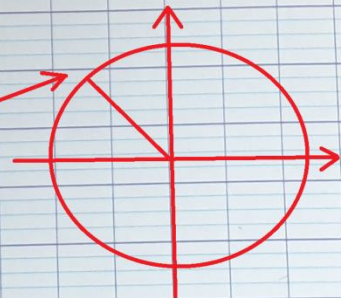


4. $z = -3\sqrt{2} + 3i\sqrt{2}$

• $R = \sqrt{(-3\sqrt{2})^2 + (3\sqrt{2})^2}$
 $= \sqrt{18 + 18} = \sqrt{36} = 6$

• $\begin{cases} \cos \theta = \frac{-3\sqrt{2}}{6} = -\frac{\sqrt{2}}{2} \\ \sin \theta = \frac{3\sqrt{2}}{6} = \frac{\sqrt{2}}{2} \end{cases}$

donc $\theta = \frac{3\pi}{4}$

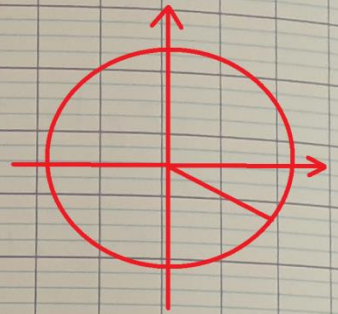


$$3. z = 2\sqrt{3} - 2i$$

$$\bullet R = \sqrt{(2\sqrt{3})^2 + (-2)^2} = \sqrt{12 + 4} = \sqrt{16} = 4$$

$$\bullet \begin{cases} \cos \theta = \frac{2\sqrt{3}}{4} = \frac{\sqrt{3}}{2} \\ \sin \theta = \frac{-2}{4} = -\frac{1}{2} \end{cases} \quad \text{donc } \theta = -\frac{\pi}{6}$$

$$\bullet z = 4 \left(\cos -\frac{\pi}{6} + i \sin -\frac{\pi}{6} \right)$$



$$5. z = -3 + 3i$$

$$\bullet R = \sqrt{(-3)^2 + 3^2} = \sqrt{9 + 9} = \sqrt{18} = 3\sqrt{2}$$

$$\bullet \begin{cases} \cos \theta = \frac{-3}{3\sqrt{2}} = -\frac{\sqrt{2}}{2} \\ \sin \theta = \frac{3}{3\sqrt{2}} = \frac{\sqrt{2}}{2} \end{cases} \quad \text{donc } \theta = \frac{3\pi}{4}$$

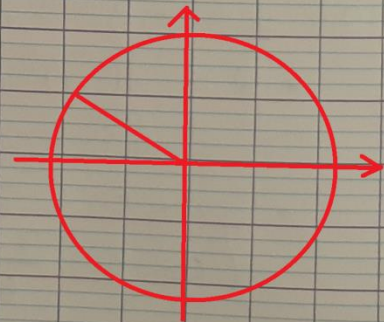
$$\bullet z = 3\sqrt{2} \left(\cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4} \right)$$

$$6. z = -\sqrt{3} + i$$

$$\bullet R = \sqrt{(-\sqrt{3})^2 + 1^2} = \sqrt{3 + 1} = \sqrt{4} = 2$$

$$\bullet \begin{cases} \cos \theta = \frac{-\sqrt{3}}{2} \\ \sin \theta = \frac{1}{2} \end{cases} \quad \text{donc } \theta = \frac{5\pi}{6}$$

$$\bullet z = 2 \left(\cos \frac{5\pi}{6} + i \sin \frac{5\pi}{6} \right)$$



Pour ceux qui se seraient également tromper sur la valeur de l'angle θ , voici un cercle trigonométrique complet sur lequel vous pouvez tout visualiser :

