2.3) Modulus-argument form of complex numbers

Worked example	Your turn
Express $z = -1 + i$ in the form $r(\cos\theta + i\sin\theta)$ where $-\pi < \theta \leq \pi$	Express $z = -1 - i$ in the form $r(\cos\theta + i\sin\theta)$ where $-\pi < \theta \leq \pi$
	$r = \sqrt{2}\left(\cos\left(-\dfrac{3\pi}{4}\right) + i\sin\left(-\dfrac{3\pi}{4}\right)\right)$

Worked example	Your turn
Express $z = -\sqrt{3} + i$ in the form $r(\cos\theta + i\sin\theta)$ where $-\pi < \theta \leq \pi$	Express $z = -1 - \sqrt{3}\, i$ in the form $r(\cos\theta + i\sin\theta)$ where $-\pi < \theta \leq \pi$

$$r = 2\left(\cos\left(-\frac{2\pi}{3}\right) + i\sin\left(-\frac{2\pi}{3}\right)\right)$$

Worked example	Your turn
The complex number z is such that $\|z\| = 3$ and $\arg z = \frac{\pi}{4}$. Find z in the form $a + bi$, where a and b are exact real numbers to be found.	The complex number z is such that $\|z\| = 5$ and $\arg z = \frac{3\pi}{4}$. Find z in the form $a + bi$, where a and b are exact real numbers to be found. $$a = -\frac{5\sqrt{2}}{2}, b = \frac{5\sqrt{2}}{2}$$

The complex number z is such that $\|z\| = 4$ and $\arg z = -\frac{3\pi}{4}$. Find z in the form $a + bi$, where a and b are exact real numbers to be found.