$x^2 = 4$

$x = \pm 2$,

$(2)^2 = 4$, $(-2)^2 = 4$

i $\quad$ $(-i)$

i^2 $\quad$ $(-i)^2$

$= -1$ $\quad$ $(-\times -) i^2$

$= i^2$

$= -1$

$\sqrt{5\cancel{i}} = i\sqrt{5}$

$a^2 - b^2 = (a+b)(a-b)$

conjugate

$b^2 = i^2 = \underline{-1}$

$2 \text{cis} 0° = 2(\cos 0° + i \sin(0°))$

$= 2(1 + \cancel{i \times 0})$

$= 2 \times 1 = \underline{2}$.

$2 \text{cis} 90° = 2(\cos 90° + i \sin 90°)$

$= 2(0 + i \times 1)$

$= 2i$

$r \text{cis} \theta = r(\cos\theta + i \sin\theta)$

$= a + bi$

$a = r\cos\theta$

$b = r\sin\theta$

Express $2 \text{ cis}\left(-\frac{3\pi}{4}\right)$ in the form $a + bi$.

Solution

$a = r\cos\theta$	$b = r\sin\theta$
$= 2\cos\left(-\frac{3\pi}{4}\right)$	$= 2\sin\left(-\frac{3\pi}{4}\right)$
$= -2\cos\left(\frac{\pi}{4}\right)$	$= -2\sin\left(\frac{\pi}{4}\right)$
$= -2 \times \frac{1}{\sqrt{2}}$	$= -2 \times \frac{1}{\sqrt{2}}$
$= -\sqrt{2}$	$= -\sqrt{2}$

Therefore $2 \text{ cis}\left(-\frac{3\pi}{4}\right) = -\sqrt{2} - \sqrt{2}i$