演習1

$$\begin{cases} e^{i\theta} = \cos\theta + i\sin\theta \\ e^{-i\theta} = \cos\theta - i\sin\theta \end{cases}$$

$$2\cos\theta = e^{i\theta} + e^{-i\theta}$$
$$2i\sin\theta = e^{i\theta} - e^{-i\theta}$$

$$\therefore \quad \cos\theta = \boxed{\frac{e^{i\theta}+e^{-i\theta}}{2}}, \quad \sin\theta = \boxed{\frac{e^{i\theta}-e^{-i\theta}}{2i}}$$

演習2

$$x^3 - 15x - 4 = (x-4)(x^2+4x+1)$$

$$\therefore \quad x = 4, \ -2\pm\sqrt{3}$$

$$\therefore \quad x = \boxed{-2\pm\sqrt{3}}$$