

4E Linear Transformations of Roots

1. The cubic equation

$$x^3 - 2x^2 + 3x - 4 = 0$$

has roots α , β and γ . Find the equations of the polynomials with roots:

- a) 2α , 2β and 2γ

Alternative approach by considering graphical transformations & substitution (easier)

b) $(\alpha + 3)$, $(\beta + 3)$ and $(\gamma + 3)$

2. The quartic equation $x^4 - 3x^3 + 15x + 1 = 0$ has roots α , β , γ and δ .
Find the equation with roots $(2\alpha + 1)$, $(2\beta + 1)$, $(2\gamma + 1)$ and $(2\delta + 1)$.