

Section 1: Roots and coefficients

Exercise level 3

1. Given that $x+3$ and $x-1$ are factors of x^3+ax+b , solve $x^2+ax+b=0$.
2. Given that a , b and c are the roots of the equation $x^3+5x+3=0$, find
 - (i) the value of $(1+a)(1+b)(1+c)$
 - (ii) the value of $\frac{1}{1+a} + \frac{1}{1+b} + \frac{1}{1+c}$
3. The equation $x^4-2x^3+ax^2+8x+b=0$ has four real roots α , β , γ and δ such that $\alpha+\beta=0$ and $\delta-\gamma=4$. Find a and b .