# Sum and product of roots

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

**1.** Find root sum/product for $x^2 - 8x + 10 = 0$. [2 marks]

Apply -b/a and c/a.

**Answer:** Sum 8; product 10.

**2.** Find root sum/product for $4x^2 + 3x - 2 = 0$. [2 marks]

Divide by leading coefficient 4.

**Answer:** Sum -3/4; product -1/2.

**3.** Form a monic equation with root sum -3 and product 2. [2 marks]

Substitute into $x^2 - Sx + P = 0$.

**Answer:** $x^2 + 3x + 2 = 0$

**4.** One root of $x^2 - 7x + 12 = 0$ is 3. Find the other without full factorisation. [2 marks]

The sum is 7, so the other is 4.

Product 3(4)=12 checks it.

**Answer:** 4

**5.** Roots of $x^2 - 4x + 1 = 0$ are r,s. Form an equation with roots 2r,2s. [3 marks]

New sum is 8 and new product is 4.

Use the monic form.

**Answer:** $x^2 - 8x + 4 = 0$

**6.** One positive root of $x^2 - kx + 15 = 0$ is three times the other. Find k. [3 marks]

Let roots t,3t, giving $3t^2 = 15$.

Both are positive, so $t = \sqrt{5}$. Add roots to find k.

**Answer:** $k = 4\sqrt{5}$