

Want more revision exercises? Get [MathsFit](#) - New from projectmaths.

<b>11</b>	<b>2a</b>	The quadratic equation $x^2 - 6x + 2 = 0$ has roots $\alpha$ and $\beta$ . (i) Find $\alpha + \beta$ . (ii) Find $\alpha\beta$ . (iii) Find $\frac{1}{\alpha} + \frac{1}{\beta}$ .	<b>1</b> <b>1</b> <b>1</b>
$x^2 - 6x + 2 = 0$ (i) $\alpha + \beta = -\frac{b}{a}$ $= -\frac{(-6)}{1}$ $= 6$ (ii) $\alpha\beta = \frac{c}{a}$ $= \frac{2}{1}$ $= 2$		(iii) $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\beta + \alpha}{\alpha\beta}$ $= \frac{6}{2}$ $= 3$	State Mean: <b>0.79/1</b> <b>0.81/1</b> <b>0.74/1</b>

\* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by the Board of Studies

### Board of Studies: Notes from the Marking Centre

This part was generally done well. The main error was to incorrectly quote the rules for the sum and product of the quadratic roots. When this occurred, the mark for part (iii) could still be obtained for evaluating  $\frac{\alpha + \beta}{\alpha\beta}$  from the previous answers. In some responses the irrational roots were calculated using the quadratic formula and full marks were possible at the expense of time, working and the likelihood of errors. There were a number of non-attempts for part (iii) and quite a few incorrect attempts to add the fractions  $\frac{1}{\alpha} + \frac{1}{\beta}$ .

Source: [http://www.boardofstudies.nsw.edu.au/hsc\\_exams/](http://www.boardofstudies.nsw.edu.au/hsc_exams/)