

6th year honours maths
Test on Algebra Chapter 2

Q.1 Show that the roots of the equation $x^2 - (a + d)x + (ad - b^2) = 0$ are real.

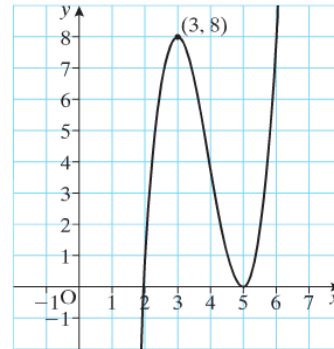
Q.2

A section of the graph of a polynomial

$$f(x) = ax^3 + bx^2 + cx + d$$

is drawn in this diagram.

- (i) Find the roots of this polynomial.
- (ii) Write an expression for $f(x)$ in terms of the factors of this polynomial.
- (iii) Find the values of a , b , c and d .
- (iv) Find an expression for the reflected image of this curve in the x -axis.
- (v) Find an expression for the reflected image of this curve in the y -axis.



- Q.4 Express $2x^2 - 4x - 5$ in the form $a(x + h)^2 + k$ and hence,
- (i) solve the equation $2x^2 - 4x - 5 = 0$
 - (ii) find the minimum point of this curve.