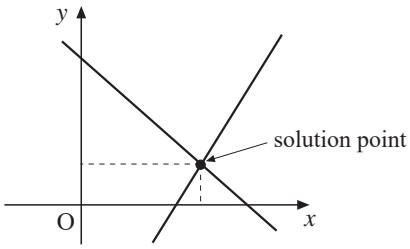
Graphs Essential information

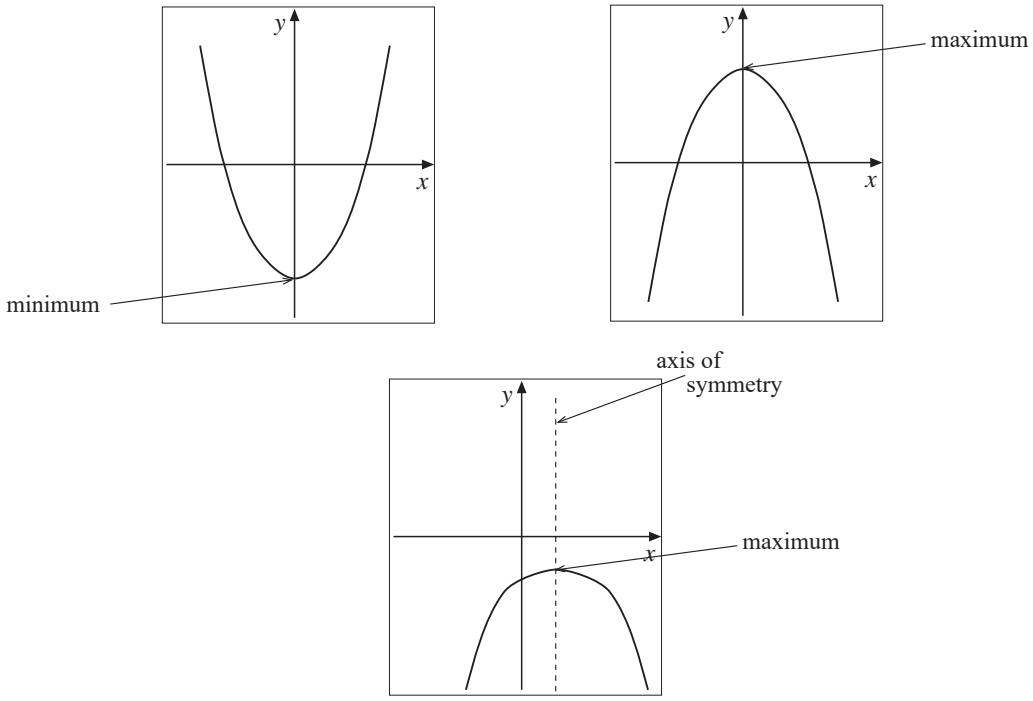


- ***Simultaneous (linear) equations*** can be solved by finding the point of intersection of the two straight lines.

They take the form

$$ax + by = c$$
$$dx + ey = f$$
(a, b, c, d, e and f constants)

- ***Quadratic functions*** are parabolic in shape. For example,



They are of the form $f(x) = ax^2 + bx + c \quad (a \neq 0)$

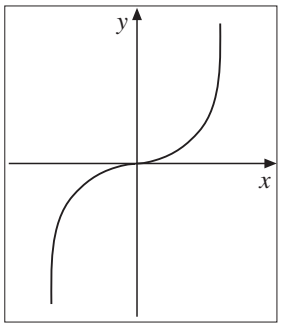
For example, $f(x) = 2x^2 - x + 1$

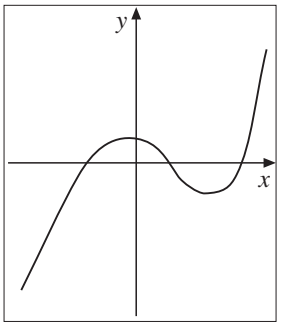
Quadratic equations are of the form $ax^2 + bx + c = 0 \quad (a \neq 0)$

For example, $2x^2 - x + 1 = 0$

Graphs Essential information

- ***Cubic functions*** are of the form



or


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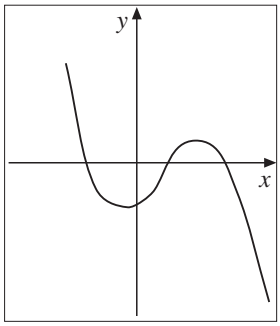


(turning point at origin)

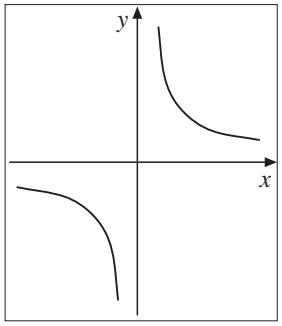
They are of the form $f(x) = ax^3 + bx^2 + cx + d \quad (a \neq 0)$

For example, $f(x) = x^3$, $f(x) = 2x^3 - x + 1$

- ***Cubic equations*** are of the form $ax^3 + bx^2 + cx + d = 0 \quad (a \neq 0)$

For example, $2x^3 - x + 1 = 0$

- ***Reciprocal functions*** are of the form



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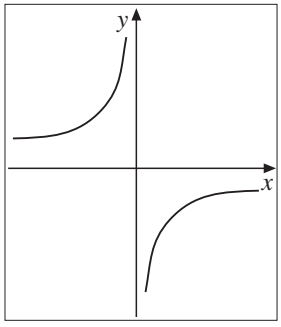
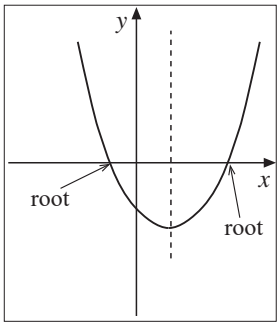


They are of the form $f(x) = \dfrac{k}{x}$

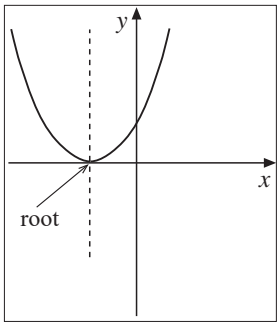
For example, $f(x) = \dfrac{1}{x}$, $f(x) = -\dfrac{2}{x}$

Graphs Essential information

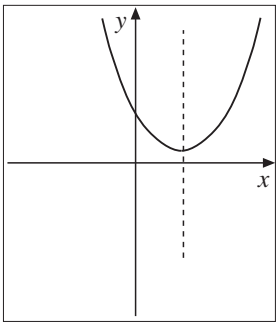
- ***Roots of a quadratic equation*** there can be 2 or 1 or 0 roots for a quadratic equation.
  For example,



2 roots

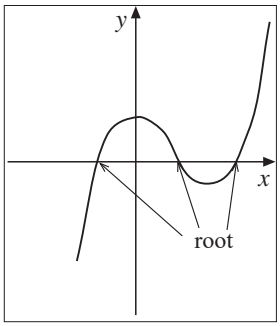


1 root

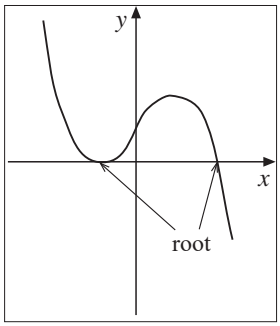


no root

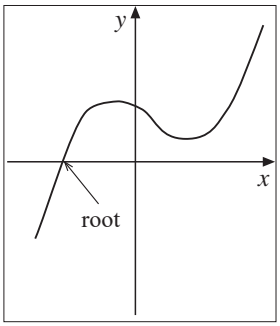
- ***Roots of a cubic equation*** there can be 3 or 2 or 1 root of a quadratic equation.
  For example,



3 roots



2 roots



1 root

- ***Tangent*** a line that touches a curve at one point only, as shown opposite.