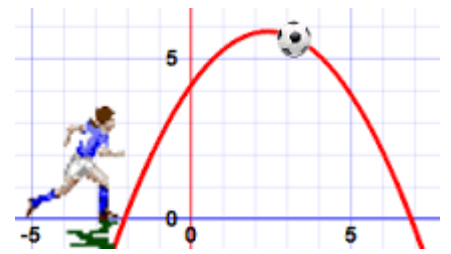


Year 11 Unit 2 Overview-Quadratics and turning points:

Target grade for tests:

You will be able to:

- Solve quadratic equations by completing the square
- Solve quadratic equations using the quadratic formula
- Work with iterative processes
- Deduce roots of quadratic functions by completing the square
- Deduce roots of quadratic functions algebraically
- Find and interpret gradients of chords and tangents
- Solve quadratic inequalities
- Solve simultaneous equations where one is a quadratic



Lesson Overview

SOLVING QUADRATIC EQUATIONS

- Complete the square for a given quadratic expression
- Apply completing the square to solve a quadratic equation
- Know and apply the formula for solving a quadratic equation of the form $ax^2 + bx + c = 0$
- Solve equations involving fractions that can be rearranged into the form $ax^2 + bx + c = 0$
- Solve problems involving quadratic equations
- Identify when iteration should be used to find approximate solutions to an equation

QUADRATIC FUNCTIONS

- Complete the square for a quadratic function
- Know that 'in the form $(x + p)^2 - q$ ' implies that completing the square is required
- Deduce the turning point of a quadratic function by completing the square
- Deduce the roots of a quadratic function by factorising
- Deduce the roots of a quadratic function using the completed square form
- Apply the concept of average rate of change in numerical, algebraic and graphical contexts
- Apply the concept of instantaneous rate of change in numerical, algebraic and graphical contexts
- Solve practical problems involving quadratic functions and rates of change

SOLVING QUADRATIC INEQUALITIES AND SIMULTANEOUS EQUATIONS WHERE ONE IS A QUADRATIC

- Choose a quadratic function related to a quadratic inequality
- Sketch the graph of the related quadratic function
- Identify the roots of the related quadratic function
- Use the graph to find, and state, the solution to a quadratic inequality
- Make an appropriate substitution when solving simultaneous equations in two variables where one is quadratic
- Manipulate and solve the resulting quadratic equation to find the values for one variable
- Find the values of the second variable by substitution
- Make connections between simultaneous equations and graphs

Key Words

Refer

to <http://studymaths.co.uk/glossary.php> for definitions of the key words

Quadratic) equation
Factorise
Rearrange
Complete the square
Unknown
Manipulate
Maximum, minimum
Parabola
Recurrence relation
Interval bisection

Notation

The form $(x + p)^2 - q$ usually implies that completing the square is required
Recurrence relations are equations such as $x_{n+1} = 2x_n - 3$

Function
Complete the square
Deduce
Root
Turning point, minimum, maximum
Rate of change
Chord
Tangent
Average rate of change
Instantaneous rate of change

Notation

The form $(x + p)^2 - q$ usually implies that completing the square is required

Unknown
(Quadratic) inequality
Variable
Manipulate
Solve
Solution set
Simultaneous equations
Substitution
Elimination

Notation

The inequality symbols: < (less than), > (greater than), ≤ (less than or equal to), ≥ (more than or equal to)