Scheme of Learning: Year 11 Higher Autumn Term

Topic Sequence: Graphs

1	2	3	4
Gradients and Lines	Non-Linear Graphs	Using Graphs	Graph Transformations

Topic Overview: Non-Linear Graphs

Students develop their knowledge of non-linear graphs in this topic, looking at quadratic, cubic, reciprocal, exponential graphs as well as the equation of a circle

Learning Sequence:

Plot and read from quadratic and cubic graphs
Using calculator and non-calculator methods, students plot quadratic and cubic graphs using a table of values, ensuring they use a smooth curve to join the points

Plot and read from reciprocal graphs
Students investigate the reciprocal function and become familiar with the concept of asymptotes

Recognise graph shapes
Students analyse the similarities and differences of linear, quadratic, cubic and reciprocal graphs

Roots and intercepts of quadratics
Students start by identifying a root from a graph and understand that quadratics can have 0, 1 or 2 roots.

Exponential graphs
Students explore exponential graphs

Equation of a circle centre (0, 0)
Students find the radii of circles with centre (0, 0) and make the connection to Pythagoras' Theorem. This reveals the general equation of a circle centre (0, 0)

Equation of the radius of a circle centre (0, 0)
Students use their knowledge of finding the gradient of a line from two points to find the equation of a radius of a circle

Equation of the tangent to a circle centre (0, 0)
Students use their knowledge of perpendicular lines t find the equation of a tangent to a circle

Tangent to a curve
Students practice drawing tangents to a curve at a point and then finding the equation of the tangent using the gradient and the given point

Sequence of Learning:

1	Plot and read from quadratic and cubic graphs
2	Plot and read from reciprocal graphs
R	Recognise graph shapes
4	Exponential graphs
5	Equation of a circle centre (0, 0)
6	Equation of the radius of a circle centre (0, 0)
7	Equation of the tangent to a circle centre (0, 0)
8	Tangent to a curve

Topic Resources:

Knowledge Map:	Non-Linear Graphs quadratic and cubic Non-Linear Graphs other including circles Circles including Theorems

Assessment:

Knowledge:	End of Topic test
Application of Knowledge:	Termly summative assessment

Supportive Reading:

Any supported reading listed here	Sparx Maths www.sparxmaths.co.uk
	Corbett Maths : www.corbettmaths.com
	AQA Revision Guide