Higher Level Mathematics Seminar Topics
Leaving Cert 2018

Functions & Calculus (Differentiation & Integration) – Sunday, January 28th, 2018

1) Problems involving Rates of Change (**2D and 3D Applications**)
2) Maximum and Minimum Problems
3) Functions, **Composite Functions**, Functions of Functions and Inverse Functions
4) The Product, Quotient and Chain Rules and **Implicit Differentiation** (included in 2016)
5) Trigonometrical, Log and Exponential Functions (**applications in 2015's Paper 1**)
6) Inverse Trig. Functions with Applications
7) Exam Questions
8) Integration (Anti-Differentiation)
9) Indefinite Integration
10) Anti-Derivatives
11) Definite Integration and **Applications to Rates**
12) Areas between Curves
13) Numerical Integration (Trapezoidal Rule)
14) Average Value or Mean Value of an Integral **and Applications**
15) Summary
16) Exam Questions

Trigonometry, Line and Circle Seminar – Sunday, March 4th, 2018

1) Applications of Sine and Cosine Rules
2) Solving problems involving Pythagoras
3) The Sine, Cosine and Tangent Ratios for Right Angled Triangles and Applications
4) **Circular Measure** with Radians and Degrees (length of an Arc, Area of a Sector)
5) Proving Trigonometrical Identities
6) Solving Trigonometrical Equations
7) **General Solution** of Trig. Equations
8) 3D Trig. Problems (including the **Tetrahedron**)
9) Plotting / Graphing Sine and Cosine Curves
10) **Word Problems** involving Plotting of Sine and Cosine Curves
11) Equation of a Line – Slope and Intercept
12) **Intersecting** Lines involving areas
13) Perpendicular distance to a line and Perpendicular Lines
14) Area of a Triangle formed by lines
15) General Equations of a Circle (g,f,c) and (h,k)
16) Equations of Tangents to a Circle
17) Length of a Tangent to a Circle
18) Touching and Intersecting Circles
19) Image of a Circle under a Transformation
20) Intersecting Lines and Circles
21) Summary
22) Exam Questions

The Seminar will also focus on word problems related to sinusoidal problems (Sine and Cosine Curves).

Statistics and Probability Seminar – Sunday, April 29th, 2018

1) The basic laws of Probability
2) Using Venn Diagrams to solve probability Exam Questions
3) Bernoulli Trials and the Binomial Distribution
4) The Standard Normal Curve and Related Probabilities
5) Areas under the Standard Normal Curve – Symmetrical Properties
6) Hypothesis Testing – Rule of Thumb and z-Score
7) Hypothesis Testing of a Proportion
8) Hypothesis Testing of Difference between Means
9) Statistical Measures – Mean, Median and Mode
10) Measures of Dispersion – Standard Deviation and Variance
11) Frequency and Cumulative Frequency – Histogram and Ogive
12) Bar Chart, Histograms, Pie Charts and Line Charts
13) Linear Correlation and Linear Regression
14) Scatter Diagrams and Line of Best Fit
15) Applications of Linear Regression
16) Applications of Binomial and Normal Distributions
17) Permutations and Combinations
18) Geometric Series and Probability
19) Summary
20) Exam Questions

The Seminar will also focus on new problems related to Hypothesis Testing and Probability.