

Lebanon Evangelical School for Boys and Girls

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Mid Year Exams : February 2011

Please place on this sheet the contents of your course that you will be examining in your Mid Year Exam. Details are expected. Chapter numbers, section headings and the like. A photocopy of what you send back to me will be sent to parents next week.

Teacher : B . Kordahi

Subject : Math (12 M)

Calculus and Statistics

- 1) Chapter 1: Irrational functions (horizontal , vertical and oblique asymptotes . Simple irrational functions)
- 2) Chapter 3 : Continuous Functions on an interval (monotone , root of an equation $f(x) = 0$, Extension by continuity)
- 3) Chapter 4 : Inverse functions (continuity , monotonicity , definition and graph)
- 4) Chapter 7 : Natural logarithm (variations , graph , primitive)
- 5) Chapter 8 : Exponential functions (domain , variations , limits , graph , primitives)
- 6) Chapter 20 : First order differential equations (differential equations , solution of a differential equation , equation of the form $y' = f(x)$, separable equations , first order linear equations with constant coefficients)
- 7) Chapter 21 : Linear second order differential equations with constant coefficients (equation of the form $y'' = f(x)$, reduced equation , equation of the type $y'' + \omega^2 y = k$)

Algebra and Geometry

- 8) Chapter 3: Vector product . The triple scalar product (components , applications, areas and volumes , analytic expressions)
- 9) Chapter 4 : Planes and lines (equation of a plane , parametric equations of a line)
- 10) Chapter 5 : Parallelism and orthogonality (relative positions of : 2 planes , 2 straight lines , a plane and a straight line ; distance from a point to a plane or to a straight line in space)
- 11) Chapter 7 : Metric relations in a triangle (sine and cosine rules with areas and radius of the circumscribed circle about a triangle)
- 12) Chapter 9 : The modulus and argument of a complex number (modulus , argument , trigonometric form of a complex number)
- 13) Chapter 10 : Exponential form of a complex number (notation , Euler's and De Moivre's formulas , trigonometric applications- linearization)
- 14) Chapter 11 : Equations with complex coefficients (quadratic equations with complex coefficients , nth roots of a complex number)
- 15) Chapter 13 : Dilations (Definitions and properties , operations on dilations)

16) Chapter 14 : Displacements (Composition of rotations)

17) Chapter 15 : Complex numbers in geometry (geometric interpretation of $\arg\left(\frac{z-a}{z-b}\right)$

and $\left|\frac{z-a}{z-b}\right|$, translation and rotation in complex forms)

18) Chapter 17 : Direct plane similitude (Definitions , properties)

19) Chapter 18 : Complex forms (transformation, special inversion)

20) Chapter 19 : Conics : The equations (Conics , curves with equations of the form

$$ax^2 + by^2 + cx + dy + e = 0)$$

21) Chapter 20 : Conics : The properties (Parabola , Ellipse ,Hyperbola , Bifocal
characterization of a conic with centre , parametric equations of an ellipse)