

Lectures on Contest Mathematics

ES2G – Olympiad Navigation on Geometry

Summer 2011

Zuming Feng
Phillips Exeter Academy and IDEA Math
zfeng@exeter.edu

©Copyright 2008 – 2011 Idea Math

Idea Math
Internal Use

Copyright © 2008-2011 IDEA MATH.

“Cogito ergo Sum” – “I think, therefore I am”

René Descartes (1596-1650)

©Copyright 2008 – 2011 Idea Math

Idea Math
Internal Use

Contents

©Copyright 2008 – 2011 Idea Math

Geometry	1
1.1 Spiral similarity and homothety	1
1.1.1 Spiral similarity	1
1.1.2 Homothety	2
1.2 Interior tangent circles and incenters	3
1.2.1 Interior tangent circles and incenters	3
1.2.2 Interior tangent circles I	3
1.3 Recent entry to intermediate level geometry problems in USAMO, TST, and IMO	4
1.4 Complex numbers and regular polygons	6
1.5 Spiral similarity and intersecting circles	7
1.6 Properties of special angles	9
1.7 The Fermat point	11
1.8 Complex numbers in geometry proofs	12
1.9 Thebaults theorem	14
1.9.1 Thebaults theorem	14
1.9.2 Interior tangent circles II	14
1.10 Recent entry to intermediate level geometry problems in USAMO, TST, and IMO	16

Idea Math
Internal Use