

1. Record Nr.	UNINA9910136292503321
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Titolo	Advanced problems in mathematics : preparing for university / / Stephen Siklos
Pubbl/distr/stampa	Open Book Publishers, 2016 Cambridge, England : , : Open Book Publishers, , 2016 ©2016
ISBN	1-78374-145-7 1-78374-144-9
Descrizione fisica	1 online resource (174 pages) : illustrations ; digital, PDF file(s)
Collana	OBP Series in Mathematics
Disciplina	510.711
Soggetti	Mathematics - Study and teaching (Higher) Calculus Geometry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	About this book -- STEP -- Worked Problems ; Worked problem 1 ; Worked problem 2 ; Problems-- §a P1 An integer equation P2 Partitions of 10 and 20 P3 Mathematical deduction P4 Divisibility P5 The modulus function P6 The regular Reuleaux heptagon P7 Chain of equations P8 Trig. equations P9 Integration by substitution P10 True or false P11 Egyptian fractions P12 Maximising with constraints P13 Binomial expansion P14 Sketching subsets of the plane P15 More sketching subsets of the plane P16 Non-linear simultaneous equations P17 Inequalities P18 Inequalities from cubics P19 Logarithms P20 Cosmological models P21 Melting snowballs P22 Gregory's series P23 Intersection of ellipses P24 Sketching $x^m (1-x)^n$ P25 Inequalities by area estimates P26 Simultaneous integral equations P27 Relation between coefficients of quartic for real roots P28 Fermat numbers P29 Telescoping series P30 Integer solutions of cubics P31 The harmonic series P32 Integration by substitution P33 More curve sketching P34 Trig sum P35 Roots of a cubic equation P36 Root counting P37 Irrationality of e P38 Discontinuous integrands P39 A difficult integral P40 Estimating the value of an integral P41 Integrating the modulus

function P42 Geometry P43 The t substitution P44 A differential-difference equation P45 Lagrange's identity P46 Bernoulli polynomials P47 Vector geometry P48 Solving a quartic P49 Areas and volumes P50 More curve sketching P51 Spherical loaf P52 Snowploughing P53 Tortoise and hare P54 How did the chicken cross the road? P55 Hank's gold mine P56 A chocolate orange P57 Lorry on bend P58 Fielding P59 Equilibrium of rod of non-uniform density P60 Newton's cradle P61 Kinematics of rotating target P62 Particle on wedge P63 Sphere on step P64 Elastic band on cylinder P65 A knock-out tournament P66 Harry the calculating horse P67 PIN guessing P68 Breaking plates P69 Lottery P70 Bodies in the fridge P71 Choosing keys P72 Commuting by train P73 Collecting voles P74 Breaking a stick P75 Random quadratics -- Syllabus

Sommario/riassunto

This book is intended to help candidates prepare for entrance examinations in mathematics and scientific subjects, including STEP (Sixth Term Examination Paper). STEP is an examination used by Cambridge colleges as the basis for conditional offers. They are also used by Warwick University, and many other mathematics departments recommend that their applicants practice on the past papers even if they do not take the examination. Advanced Problems in Mathematics is recommended as preparation for any undergraduate mathematics course, even for students who do not plan to take the Sixth Term Examination Paper. The questions analysed in this book are all based on recent STEP questions selected to address the syllabus for Papers I and II, which is the A-level core (i.e. C1 to C4) with a few additions. Each question is followed by a comment and a full solution. The comments direct the reader's attention to key points and put the question in its true mathematical context. The solutions point students to the methodology required to address advanced mathematical problems critically and independently. This book is a must read for any student wishing to apply to scientific subjects at university level and for anybody interested in advanced mathematics.

2. Record Nr.	UNINA9910823336903321
Autore	Kranzler Leonard I.
Titolo	The Greenberg rapid review : a companion to the 8th edition / / Leonard I. Kranzler, Jonathan G. Hobbs
Pubbl/distr/stampa	New York, New York : , : Thieme, , 2017 ©2017
ISBN	1-62623-207-5
Descrizione fisica	1 online resource (576 pages)
Disciplina	617.4/80076
Soggetti	Nervous system - Surgery
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia