

## The Mathematical Gazette


R. S. Ball's Mechanics: bringing Newton to the masses?

Volume 101
Number 551
July 2017

## CONTENTS

## Articles

Lyness cycles Stan Dolan ..... 193
Generalisation of a quadrilateral Martin Josefsson ..... 208 duality theorem
Properties of bisect-diagonal quadrilaterals Martin Josefsson ..... 214
Finding sums of powers using physical David Treeby ..... 227arguments
Expressing harmonic sums as fractions G.J.O.Jameson ..... 236
Brilliance or steadiness? Jeehoon Kang ..... 250
Integration based on the parametrisation Jonathan Hoseana ..... 261 of conics
Some alternative derivations of Seán M. Stewart ..... 268 Craig's formula
R. S. Ball's Mechanics: bringing Newton Christopher D. Hollings ..... 280 to the masses?
Notes 101.15 to 101.25
An elementary proof that not all principal Robert A. Wilson ..... 289 ideal domains are Euclidean domains
When does $n$ ! have $n$ digits?Nick Lord293
Goats and birdsGraham Jameson and296Nicholas Jameson

# CAMBRIDGE UNIVERSITY PRESS 

Printed in the UK by Bell \& Bain Ltd.

## CONTENTS (continued)

## Notes 101.15 to 101.25 (continued)

Proof without words: relationship between Paul Stephenson ..... 300 inverse cotangents
Approximate quadrature of the circle Mieczysław Szyszkowicz ..... 301 using a set square
A natural occurrence of the Golden Ratio John Molokach ..... 303
A homothetic property of orthic triangles Grégoire Nicollier ..... 303
The hyperbolic version of the Mowaffaq Hajja ..... 306 Steiner-Lehmus theorem
One more note on the extremal properties Mowaffaq Hajja ..... 308 of the incentre and the excentres of a triangle
Generalisation and sharpening of Zoltan Retkes ..... 310 Problem 100.C
A note on tilings and associated Martin Griffiths ..... 314 linear recurrences
Teaching Notes
Studying $\frac{A}{x+B}+\frac{C}{x+D}$ without derivatives Martin Celli ..... 319
Pappus in two dimensions, Mamikon in three Paul Stephenson ..... 322
An area conundrum Nick Lord ..... 325
Trigonometric identities from regular polygons Paul Stephenson ..... 327
Correspondence ..... 335
Feedback ..... 337
Problem Corner Nick Lord ..... 339
Student Problems Stan Dolan ..... 344
Reviews ..... 348

