



basic education

Department
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS NATIONAL SENIOR CERTIFICATE EXAMINATIONS

MATHEMATICS P1

2021

MARKS: 100

TIME: 1 hour

This question paper consists of 10 pages and 1 information sheet.

01/00

100/001

QUESTION 1

- 1.1 Solve for x :
 - 1.1.1 $x^2 + 3x + 2 = 0$ (5)
 - 1.1.2 $3x^2 + x - 4 = 0$ (Show partial solution in TWO distinct parts) (10)
 - 1.1.3 $x^2 = 49$ (5)
- 1.2 Given $y = \frac{3x}{x^2 + 2}$
 - 1.2.1 Solve for x (5)
 - 1.2.2 Hence solve for x : $2x^2 + 3x = 4$ (5)
- 1.3 Without using a calculator, calculate the value of $\sqrt{\frac{36x^2 + 49}{121x^2}}$ (5)
- 1.4 Solve for x and y simultaneously:
 $(x + y + 2) = \frac{1}{x}$ and $\frac{1}{y} = 4y + 1$ (10)

QUESTION 2

- 2.1 The first term of an arithmetic sequence is 2 and the 17th term is 38.
 Determine:
 - 2.1.1 d , the common difference of the sequence (5)
 - 2.1.2 The number of terms in the sequence if the last term of the sequence is 47 (5)
 - 2.1.3 The sum of the first 10 terms in the sequence (5)
- 2.2 $10, 15, 20, 25, \dots$ is a positive number pattern.
 - 2.2.1 Write down the 10th term of the number pattern (5)
 - 2.2.2 Determine the n^{th} term of the number pattern (5)
 - 2.2.3 Determine the maximum value of the following number pattern:
 $-10, -\frac{9}{2}, -7, -\frac{5}{2}, -3, \dots$ (5)

June 2013 Maths Paper 1 Memorandum

Rachel Shanks



June 2013 Maths Paper 1 Memorandum:

Hello World Hannah Fry, 2018-09-18 Shortlisted for the 2018 Baillie Gifford Prize and the 2018 Royal Society Investment Science Book Prize A beautifully accessible guide One of the best books yet written on data and algorithms Times UK If you were accused of a crime who would you rather decide your sentence a mathematically consistent algorithm incapable of empathy or a compassionate human judge prone to bias and error What if you want to buy a driverless car and must choose between one programmed to save as many lives as possible and another that prioritizes the lives of its own passengers And would you agree to share your family's full medical history if you were told that it would help researchers find a cure for cancer These are just some of the dilemmas that we are beginning to face as we approach the age of the algorithm when it feels as if the machines reign supreme Already these lines of code are telling us what to watch where to go whom to date and even whom to send to jail But as we rely on algorithms to automate big important decisions in crime justice healthcare transportation and money they raise questions about what we want our world to look like What matters most Helping doctors with diagnosis or preserving privacy Protecting victims of crime or preventing innocent people being falsely accused Hello World takes us on a tour through the good the bad and the downright ugly of the algorithms that surround us on a daily basis Mathematician Hannah Fry reveals their inner workings showing us how algorithms are written and implemented and demonstrates the ways in which human bias can literally be written into the code By weaving in relatable real world stories with accessible explanations of the underlying mathematics that power algorithms Hello World helps us to determine their power expose their limitations and examine whether they really are improvement on the human systems they replace

Disorder and the Disinformation Society Jonathan Paul Marshall, James Goodman, Didar Zowghi, Francesca da Rimini, 2015-04-17 This book is the first general social analysis that seriously considers the daily experience of information disruption and software failure within contemporary Western society Through an investigation of informationalism defined as a contemporary form of capitalism it describes the social processes producing informational disorder While most social theory sees disorder as secondary pathological or uninteresting this book takes disordering processes as central to social life The book engages with theories of information society which privilege information order offering a strong counterpoint centred on disinformation Disorder and the Disinformation Society offers a practical agenda arguing that difficulties in producing software are both inherent to the process of developing software and in the social dynamics of informationalism It outlines the dynamics of software failure as they impinge on information workers and on daily life explores why computerized finance has become inherently self disruptive asks how digital enclosure and intellectual property create conflicts over cultural creativity and disrupt informational accuracy and scholarship and reveals how social media can extend but also distort the development of social movements

14-19 diplomas Great Britain: Parliament: House of Commons: Education and Skills Committee, 2007-05-17 In October 2004 the Tomlinson report downloadable at <http://www>

dfes.gov.uk/14-19/documents/Final_Report.pdf set out wide ranging proposals for changes to the curriculum and examination arrangements for the education of 14 to 19 year olds In February 2005 the Government published its response in the form of a White Paper Cm 6476 ISBN 9780101647625 detailing a 10 year reform programme including the introduction of 14 new awards originally called vocational Diplomas thus rejecting the overarching Diploma award recommended in the Tomlinson report Whilst stating its belief that the proposed changes would have been better structured and more coherent had Tomlinson's proposals been adopted the Committee's report examines the design development and implementation of the Government's Diplomas scheme

Teacher Preparation in Scotland Rachel Shanks, 2020-09-25 This book charts the origins and development of teacher preparation in Scotland from 1872 onwards covering key milestones in policy and practice and looking ahead to the future It is a truly comprehensive record of the historic current and potential evolution of teacher preparation in Scotland

Exploring the Contexts for Early Learning Rory McDowall Clark, 2016-09-01 The concept of readiness for school is attractive to policy makers but many academics researchers and practitioners argue that an early start to formal learning may be misguided This book introduces readers to an increasing body of evidence which demonstrates that young children need opportunities to learn and develop in environments that support their emotional and cognitive needs offering opportunities to develop autonomy competence and self regulation skills With advice on implementing research findings in practice this book provides clear guidance on how to foster and develop these attributes scaffold steps into new areas of learning and support children in facing new challenges Chapters cover Policy and discourses Taking account of development Approaches to Early Years Learning The Diversity of Children's Early Experiences Transitions and starting school Where to in the Future Exploring the Contexts for Early Learning will be essential reading for students practitioners policy makers and all those interested in the school readiness agenda

The Parliamentary Debates (Hansard). Great Britain. Parliament. House of Lords, 2014

Computer Graphics and Geometric Modeling Using Beta-splines Brian A. Barsky, 2013-12-20

A Computational Differential Geometry Approach to Grid Generation Vladimir D. Liseikin, 2013-03-14 Grid technology whose achievements have significant impact on the efficiency of numerical codes still remains a rapidly advancing field of computational and applied mathematics New achievements are being added by the creation of more sophisticated techniques modification of the available methods and implementation of more subtle tools as well as the results of the theories of differential equations calculus of variations and Riemannian geometry being applied to the formulation of grid models and analysis of grid properties The development of comprehensive differential and variational grid generation techniques reviewed in the monographs of J F Thompson Z U A Warsi C W Mastin P Knupp S Steinberg V D Liseikin has been largely based on a popular concept in accordance with which a grid model realizing the required grid properties should be formulated through a linear combination of basic and control grid operators with weights A typical basic grid operator is the operator responsible for the well posedness of the grid model and construction of

unfolding grids e g the Laplace equations generalized Laplace equations for surfaces or the functional of grid smoothness which produces fixed nonfolding grids while grid clustering is controlled by source terms in differential grid formulations or by an adaptation functional in vari ational models However such a formulation does not obey the fundamental invariance laws with respect to parameterizations of physical geometries It frequently results in cumbersome governing grid equations whose choice of weight and control functions provide conflicting grid requirements South African national bibliography
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