

# A CATALOGUE OF ELECTRONIC INFORMATION RESOURCES ON MATHEMATICS

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## Abstract

The paper focuses on electronic information resources in mathematics. The objective of this subject guide is to help graduate students, teachers and researchers in mathematical sciences. It tries to apprise the researchers who are keenly involved in mathematics to trace the pertinent electronic sources in mathematics out of the bewildering number of such sources which could be of immediate relevance to them. Information resources are the backbone of any research work. The research in mathematics relies heavily on past literature unlike research in other disciplines of science and engineering. Availability of literature electronically impacts the current research in mathematics. This paper could be construed as a bibliography of diverse electronic resources such as electronic databases, subject gateways, websites related to mathematics. The electronic resources include online mathematical reference sources such as dictionaries, encyclopaedias, e-books, e-journals, review databases, full-text databases, bibliographical databases, mathematical softwares, mathematical organisations, etc. It is aimed at bibliographic control. The paper is also a guiding tool for librarians serving mathematical community.

**Keywords:** Mathematics e-resources, Subject guides, Mathematics electronic resources, Mathematics education

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## Introduction

The proliferation and revolutionary growth of information resources in electronic format has influenced the dynamics and basics of the information handling and dissemination processes in a big way. Electronic resources (E-resources) refer to those materials which require computer access, whether through microcomputers, mainframe or other types of computers which may be either locally mounted or accessed remotely through Internet.

The acute dearth of the availability of current, the relevant and up-to-date information hampers or impedes the research work. E-resources have improved the communication and access to scholarly content especially through Internet. Pre-prints make scholarly content available to the researcher even before it is actually published, and hence serve as potent means to deploy knowledge to facilitate the carrying out of research activities in an unhindered way. Electronic sources of information make access and retrieval of information easier. These information resources because of their ubiquitous presence, it becomes imperative for every library to devise ways and means to promote search ability through the manipulability and easy accessibility to the electronic resources of the relevant and required knowledge. This paper is a modest attempt to acquaint the researchers in the field of mathematics with the rich electronic resources in terms of erudition & lucidity of expression, which will go a long way in accelerating the process of their research.

Knowledge seekers have no option but to take recourse to electronic resources to attain their targets or desired ends.

### **Method**

The work had been planned to find and evaluate various important electronic information resources for mathematicians. One of the author, working as mathematics librarian listed various e-resources by reviewing related literature and surfing through the Internet. Fowler (2004) edited a very comprehensive guide for using mathematics literature, available both in print and electronic forms. Roberts (2002) and De Carlo (2003) evaluated and catalogued mathematical resources available on the Internet. The present subject guide is on the same pattern and an effort to link the earlier works in the field. The e-resources were evaluated in terms of various factors like authority, scope, arrangement, treatment, currency, etc.

### **Electronic Reference Sources in Mathematics**

Reference sources provide background information (facts, definitions, meanings) and access to important factual, statistical information and references to other sources of information. Reference Sources in mathematics include mathematical encyclopaedias, dictionaries, biographical, historical sources, etc. Electronic reference sources provide numerous advantages over printed resources like speed, convenience, currency, ability to navigate through hyperlinks etc.

### **3A Encyclopaedias & Dictionaries**

Subject encyclopaedias provide specific background information of a topic to a beginner. These also provide with list of sources for additional reading. Subject dictionaries explain the technical terms of the given subject.

#### **3A1 Eric Weisstein's World of Mathematics/ Wolfram Mathworld**

<http://www.mathworld.wolfram.com>

This encyclopaedia is available free online and regularly updated. It is a well-organized encyclopaedia of mathematics. Created and developed by Eric Weisstein, its value is augmented and enriched by the contributions regularly made by eminent researchers from across the world. So it would not be beside the point to look upon it as a clearing house for new mathematical discoveries. Apart from containing summaries of more than 300 mathematical terms, it provides the readers with interactive elements such as animated graphics, and references at the end of each description, and hyperlinks to the related terms.

#### **3A2 Mathematical Atlas: A Gateway to Modern Mathematics**

<http://www.math.niu.edu/~rusin/known-math/welcome.html>

It is an authenticated, well organized encyclopaedia which provides introduction to the areas of modern mathematics. The encyclopaedia has a collection of short articles. The articles have references/ pointers for further information. The arrangement of information is hierarchical each with its own index page. Different navigational tools are available

like list of subject headings, search for a topic by keywords, etc.

3A3 Planet Math <http://www.planetmath.org/>

It is a community generated encyclopaedia. Its primary concern is to make mathematical knowledge more accessible. Collaborative efforts by a number of great scholars were made to make it so content rich.

### **3A4 Online Encyclopaedia of Integer Sequences (OEIS) <https://oeis.org/wiki/welcome>**

The OEIS is a database of nearly 2,00,000 sequences of integers, arranged lexicographically. The entry for a sequence lists the initial terms, a description, formulae, programs to generate the sequence, references, links to relevant web pages and other information. One has to register before submitting a sequence. This website is used by people to get information about a particular number sequence. Its main purpose is to allow mathematicians or other scientists to find out if some sequence that turns up in their research has ever been seen before. If it has, they may find that the problem they are working on has already been solved, or partially solved by someone else. Or they may find that the sequence showed up in some other situation, which may show them an unexpected relationship between theirs and something else. Another purpose is to have an easily accessible database of important but difficult to compute sequences. Index to OEIS shows the topics covered.

### **3A5 Encyclopaedia of Mathematics Wiki <http://www.encyclopediaofmath.org/>**

It is an open access resource for the mathematics community. The original articles are from the online encyclopaedia of Mathematics published by Kluwer Academic Publishers in 2002. The content of this encyclopaedia has been made open to the public by Springer Inc. with the European Mathematical Society (EMS). This wiki is a Media wiki that uses the MathJax extension, making it possible to insert mathematical equations in TEX and LATEX.

### **3B Electronic Biographical Sources**

Biographical sources provide a bio-sketch of a person's life including his education, career, specific contributions to the field, accomplishments, awards and honours.

3B1 Biographies of Women Mathematicians. LH Riddle, Ed.

<http://www.agnesscott.edu/lriddle/women/women.html>

It includes biographies of distinguished women mathematicians. It showcases the numerous achievements of women in the field of mathematics. Biographies of outstanding women mathematicians are included herein. Some photographs have also been incorporated. There are over 100 entries. The entries contain references to further information on mathematicians.

### **3B2 History of Mathematics Links: Sites Relating to Individual Mathematicians**

<http://www.maths.tcd.ie/pub/HistMath/Links/People.html>

This site contains links to sites on distinguished mathematicians, including such

historically conspicuous and illustrious individuals as Archimedes, and also modern thinkers like Paul Erdos. The School of Mathematics, Trinity College, Dublin hosts the site.

### **3B3 Mathematicians of Seventeenth and Eighteenth Centuries**

<http://www.maths.tcd.ie/pub/HistMath/People/RBallHist.html>

This website presents a biographical description and works of seventeenth and eighteenth century mathematicians, adapted from "A short Account of the History of Mathematics by W.W. Rouse Ball (4th Edition, 1908). The entries of mathematicians and scientists are approximately in a chronological order. The biographical entries are also indexed in alphabetical order. There are no additional references or links.

### **3C Electronic Historical Sources**

Historical sources provide history of the given subject, historical monographs in the specific subject and eminent personalities in the field.

3C1 Cornell University Library Historical Math Monograph

<http://mathbooks.library.cornell.edu/>

The Cornell University library historical mathematics monographs is a collection of selected mathematical monographs whose copyrights are expired. These monographs were brittle and decaying and cried for retrieval. The images of these monographs were made and facsimile editions on acid free paper were created and made available online. The collection has around 576 mathematics books.

### **3C2 Mac Tutor History of Mathematics <http://www-groups.dcs.st-and.ac.uk/history/>**

This website is hosted by School of Mathematics and Statistics of University of St. Andrews, Scotland. It includes numerous index pages like biographies index, history topics index, additional material index, famous curves index, mathematicians of the day, search the archive.

### **Online Databases in Mathematics**

Online databases provide access and search facilities to the information stored in the central computer through a remote terminal. The reference databases refer or point the user to another source for additional information or fulltext. The fulltext/source databases contain the original source data, enabling the user to view, print or download the complete text of each referenced document.

### **4A Zentrablatt Math <http://www.ZbMATH.org/about/>**

ZbMATH is a bibliographic database. It is the world's most comprehensive database that provides abstracting and reviewing service in pure and applied mathematics. It contains more than 3 million bibliographic entries. The coverage starts since 1826 and is complete from 1868 to the present by the integration of the "Jahrbuch uber die Fortschritte der Mathematik" database. It provides easy access to bibliographic data, reviews and abstracts from all areas of pure and applied mathematics. All entries are classified according to the Mathematics Subject Classification Scheme and are adorned with keywords in order



to characterize their particular contents. It covers all available published and peer-reviewed articles, books, conference proceedings etc.

The database contains about 1,65,000 direct links to electronic versions of indexed publications, to publishers' websites and/or to electronic libraries with open access to full texts. ZbMATH is updated daily with new bibliographic data and abstracts.

#### **4B MathSciNet [www.ams.org/mathscinet/help/about.html](http://www.ams.org/mathscinet/help/about.html)**

It is the electronic version of Mathematical Reviews. It is a bibliographic database, covering the world's mathematical literature since 1940. It is created and maintained by the American Mathematical Society (AMS). It is an easily searchable database of reviews, abstracts and bibliographic information for mathematical literature. The entries are classified according to Mathematical Subject Classification. The database is fully searchable. It is designed with different tools that help navigate the mathematical sciences literature. Other significant features are the reviews to the current literature written by mathematical experts; links to articles, journals and publishers, linked reference lists, citation information on articles, books and journals. It is a paid resource that caters to the varied needs of the mathematics scholars. "It is a database which is useful not only to mathematicians but to science and engineering faculty also. The search example given above clearly illustrates this fact. We recommend that more efforts should be directed towards promoting MathSciNet to science and engineering oriented disciplines so that faculty and students start benefiting from it." Dominy and Bhatt (2001)

#### **4C Math Educ <http://www.zentralblatt-math.org/matheduc/>**

Math Educ (Formerly MATHDI) is the only international reference database offering a world-wide overview of current and recent literature on mathematics education. This ranges from didactics in mathematics to textbooks and teaching materials. It also covers education in computer science on the elementary level. It comprises literature for all school levels up to university education, teachers' training, job training and general educational and pedagogical issues. About 500 journals from all over the world are evaluated, in addition to incorporating books, reports, conference proceedings, dissertations, syllabuses, curricula, audio-visual media, teaching aids, games and software.

#### **4D Lecture Notes in Mathematics <http://link.springer.com/bookseries/304>**

It is a series by Springer that reports on new developments in all areas of mathematics and their applications at a high level. The materials published include research monographs, lectures on a new field or presentation of a new angle in a classical field and summer schools and intensive courses on topics of current research. 2133 volumes have been published since 1964 till 2014. It is available online also, and is a paid resource.

#### **4E Digital Mathematics Library (DML)**

[http://www.mathematik.uni-bielefeld.de/~rehmann/DML/dml\\_links.html](http://www.mathematik.uni-bielefeld.de/~rehmann/DML/dml_links.html)

DML has retro-digitized mathematics journals and monographs. The basic objective of

DML is to have all the mathematical literature online and make available through a central source to anyone who has a computer and internet connection. It is actively engaged in retro-digitizing the past mathematics literature. DML contains links to 4609 digitized books and to 577 digitized journals/ seminars.

4F AMS Books Online <http://www.ams.org/samplings/math-history/math-history>

American Mathematical Society (AMS) offers a few free online books (especially on the History of Mathematics), a few free online resources and articles in Notices of the AMS which include obituaries, biographies and interviews and general history articles.

**4G MATHnetBASE [http://www.crcnetbase.com/page/mathematics\\_ebooks](http://www.crcnetbase.com/page/mathematics_ebooks)**

It provides access to over 70 full text mathematical resources, including handbooks and manuals, published by CRC press. Formulas, techniques, derivations and background material needed in all areas of applied mathematics are included. Publications can be browsed or studied exhaustively to carry out research.

**4H Oxford Scholarship Online - Mathematics <http://www.oxfordscholarship.com/browse?t1=maths>**

It is a searchable database of e-books published by Oxford University Press in the area of mathematics. Subjects covered include - algebra, applied mathematics, combinatorics, discrete mathematics, geometry/topology, history of mathematics, mathematical physics, numerical analysis, etc

**4I SIAM e-books <http://www.siam.org/books/ebooks/index.php>**

It is a database of nearly 400 e-books, covering the broad areas of mathematics - applied and theoretical. Specific subject areas covered include – applied geometry, applied mathematics education, applied probability, astronomy, discrete mathematics, fluid mechanics, functional analysis, linear algebra and matrix theory, differential equations, real and complex analysis.

**4J SIAM Journals online <http://epubs.siam.org/journals>**

It provides full text articles from journals of the Society for Industrial and Applied Mathematics (SIAM). Electronic issues are published on an article by article basis prior to the corresponding print issues.

**4K Springer Link <http://link.springer.com/>**

It provides researchers with access to millions of scientific documents from journals, books, series, protocols and references.

**4L ACM Digital Library <http://dl.acm.org/>**

It provides access to the citations and the full text of all the articles published by the ACM (Association for Computing Machinery) in journals, newsletters and conference proceedings.

**4M Journal Citation Reports <http://thomsonreuters.com/journal-citation-reports/>**

It is a resource tool for journal evaluation in areas of science & technology and social sciences. It shows the highest impact journals, most frequently used journals, hottest journals, largest journals.

**4N JSTOR <http://www.jstor.org/>**

It provides image and full text online access to back issues of selected scholarly journals in history, political science, economics, mathematics etc.

**4O Online Journal Archive – Mathematics and Statistics**

<http://www.tandf.co.uk/libsite/productInfo/journals/onlineArchive/math/>

It provides full text access to 35 Taylor and Francis journals including algebra, analysis, applied mathematics, computer mathematics, dynamics, history of mathematics, mathematics education, optimization, probability and statistics.

**4P Science Direct <http://www.sciencedirect.com/>**

Its main focus is on sciences including mathematics.

**4Q Jahrbuch Project- Electronic Research Archive for Mathematics (ERAM)**

<http://www.emis.de/MATH/JFM/JFM.html>

This database is the electronic research archive that results from a project supported by the Deutsche Forschungsgemeinschaft (DFG). It has a literature database based on the "Jahrbuch über die Fortschritte der Mathematik" (1868-1942) and an archive of digitised mathematical publications at the Staats and Universitätsbibliothek Göttingen.

**4R European Digital Mathematics Library (EuDML) <http://eudml.org/>**

EuDML strives to make the mathematical literature available online in the form of an authoritative and enduring digital collections. This digital collection is developed and maintained by a network of institutions. EuDML provides free access to a vast digital content and offers a variety of services to anonymous users. Registration enables the users to customize the library and tailor the services to his/ her personal needs, to share views and to become a partner in improving its content.

**4S Online Textbooks <http://people.math.gatech.edu/~cain/textbooks/onlinebooks.html>**

This webpage makes available electronically around 77 textbooks free of cost. The webpage is hosted by George Cain, School of Mathematics, Georgia Institute of Technology.

**4T Bookboon-Mathematics and Statistics e-books**

<http://www.bookboon.com/en/statistics-and-mathematics-ebooks>

This website hosts free e-books on numerous topics including Matlab, probability, differential equations and complex functions. It requires registration.

### **Mathematics Preprints and E-prints**

Directory of preprint servers furnishes the current homepage URLs and email addresses of mathematical preprint and e-print servers throughout the world. It helps in finding these servers, and enables to browse the articles posted on them, or to post an article to the server itself. Electronic Preprint servers are an integral part of research culture in mathematics (Jackson, 2002). These servers are divided into three categories:

Umbrella servers - which cover all areas of mathematics such as the Front for the Mathematics Arxiv and the MPRESS/Math-Net.preprints server. These servers do not contain actual papers but provide links to where the papers reside.

Special subject servers - Institute and Department Servers (servers administered by Mathematics department and institutes)

Retired preprint servers - Preprints or unpublished articles are also called e-prints. E-prints are useful to mathematicians for their research. They are useful to those who try to find out what the most current research is, or who want to disseminate their research quickly and easily. One has the facility to post and read the articles free.

#### **5A ArXiv.org ePrintarchive (Mathematics Section) <http://www.arxiv.org/archive/math>**

ArXiv.org is an electronic archive and repository of electronic preprints of scientific papers in the fields of mathematics, physics, astronomy etc. which can be accessed online. It provides open access to e-print articles in mathematics from 1991 to the present. It is hosted by Cornell University. The subject areas covered include algebraic geometry, logic probability theory and spectral theory. Articles can be browsed by author, title, subject area or by year.

#### **5B Mathematics Preprint Server <http://www.sciencedirect.com/preprintarchive>**

This is a preprint server managed by Elsevier. This server allows readers to rank and discuss articles. For submission of preprints one must register, but searching and browsing are allowed without registration. There are approx. 550 articles on the server.

#### **5C MPRESS: Mathematics Preprint Search System <http://mathnet.preprints.org/>**

This is an index to preprints and not a full text archive. It allows both searching and browsing by subject area. It is supported by Math-Net project, and was started under the aegis of the European Mathematical Society.

#### **5D Math on the Web [www.mathontheweb.org/](http://www.mathontheweb.org/)**

Math on the Web indexes resources, mainly of research and University level

**5E DSpace@MIT: Deptt of Mathematics <http://dspace.mit.edu/handle/1721.1/7841>**

It contains research and theses deposited in MIT's institutional repository by members of the Department of mathematics.

**5F Institute for Mathematics and its Applications (IMA) <http://www.ima.umn.edu/>**

An archive of pre-prints published at the University of Minnesota.

**5G K-Theory. University of Illinois. Department of Mathematics Preprints**

<http://www.math.uiuc.edu/K-theory/>

It is an archive of current and previous preprints dealing with algebraic number theory, K-theory, and the department's faculty and graduate students research reports.

**5H University of Illinois at Urbana-Champaign**

[www.library.illinois.edu/mtx/refer-research/preprints.html/](http://www.library.illinois.edu/mtx/refer-research/preprints.html/)

It offers open access to e-print articles in mathematics from 1991 to the present.

**Mathematical Softwares**

Mathematical softwares are used to calculate or analyze algebraic, numeric, symbolic or geometric data. These contribute to mathematical research enabling exciting advances in mathematics.

**6A Wolfram Mathematica <http://www.wolfram.com/products/mathematica>**

Mathematica is a premier application for computation. It is used in any workflow that involves computations like hedge fund trading website or publishing interactive engineering textbooks, developing embedded image recognition algorithms or teaching calculus. It is used in data science, finance, modelling, software development, engineering medicine, biotechnology etc. It is a paid electronic-resource.

**6B MAPLE <http://www.maplesoft.com/>**

It provides numerous products to enable scientists, mathematicians, engineers to work in a more efficient, more expeditious and more accurate way. It provides technical computing and documentation facilities. It is a paid resource.

**6C MATLAB <http://www.mathworks.com/>**

It offers products for MATLAB, the language of technical computing, and Simulink, for simulation and model based design.

**Conversion Tables and Calculators**

Conversion tables and calculators are used for important mathematical conversions and calculations.

**7A World Wide Metric <http://www.worldwidemetric.com/>**

This website offers different conversion calculators like pressure conversion, temperature conversion, length conversion, weight conversion, volume conversion.

**7B Metric Conversions <http://www.metric-conversions.org/>**

This website aims to help people convert units of measurement with metric converters and conversion tables, and to better understand alternative measurements that they are unfamiliar with. The measurement units are categorized into types (such as temperature conversion, weight conversion and so on).

**7C Measurement Conversion <http://www.convert-me.com/en/>**

The most common measurement conversions are mass and weight; distance and length; capacity and volume; temperature. It provides online calculators for quick and easy metric conversion and conversion tables for both commonly used and exotic units.

**7D Metric Conversion Calculator <http://www.conversion-metric.org/>**

Conversion-metric.org is an online metric conversion calculator tool, which helps to convert metric units easily.

**7E Calculator.com <http://www.calculator.com/>**

The site offers different varieties of calculators like standard calculator, fractions calculator, scientific calculator, Graphing calculator, percentage calculator, loan calculator, temperature calculator etc.

**7F Math.com Online Calculators**

<http://www.math.com/students/calculators/calculators.html>

It offers different types of calculators like basic calculator, scientific calculator, square root calculator, circle calculator for finding area, radius, perimeter; prime number calculator for finding whether the given number is prime or not; percentage calculators; quadratic equations input a,b,c and find roots calculator; percentage calculator; trigonometry calculator; probability calculator and finance-compound savings calculator.

**7G Calculator.net [www.calculator.net](http://www.calculator.net)**

It offers a variety of math calculators like scientific, fraction, percent, time, volume etc.

**Subject Gateways and Directories**

Subject gateways provide access to Internet resources with reference to a particular subject field or category of users. Directories provide links to important mathematical resources available on Internet.

**8A Math Forum- Internet Mathematics Library [www.mathforum.org/library/](http://www.mathforum.org/library/)**

It is a catalogue of mathematics internet resources. It provides links to internet resources like websites, software, internet projects and public forums for discussion. Web resources are divided into several categories such as mathematical topics, resource types and



education topics and resources.

**8B MathGuide <http://www.mathguide.de/>**

The MathGuide is a subject gateway to mathematics. It is located at the Lower Saxony State and University library, Gottingen (Germany). It has different catalogues like subject catalogue, source type catalogue, journals catalogue, search engine, OPAC, etc.

**8C P.A.M Resources in Mathematics <http://www.Pam.sla.org/subjects/math/>**

This gateway is produced by the Physics-Astronomy-Mathematics division of the US Special Libraries Association. It includes the list of useful links under the categories- Directories/ Biographies/ Professional Societies, Institutions, Online books, Reference Sources, Preprints etc.

**8D Galaxy-Mathematics <http://www.galaxy.com/dir14816/mathematics.htm>**

It is a mathematics internet directory. It contains links divided into numerous categories.

**8E NA-Net <http://www.netlib.org/na-net/>**

The NA-Net is a subject gateway in numerical analysis. It provides two independent databases and a weekly digest to its members.

**8F The Electronic Library of Mathematics (ELibM) <http://www.emis.de/ELibM.html>**

It was established in 1996. It is the longest running and largest open access repository in mathematics. It provides resources under numerous categories like Journals, Proceedings, Monographs, Lecture Notes, Software and other special electronic resources. All material is in electronic form and access is free.

**8G Math WWW Virtual Library- Bibliographies**

<http://www.math.fsu.edu/virtual/index.php?f=2>

This is a list of bibliographies maintained online by the Florida State University- Department of Mathematics. The information on the subject is put into various appropriate categories. It includes a list of 19 bibliographies such as a bibliography of Bernoulli numbers.

**8H Internet Mathematician <http://www.vtstutorials.co.uk/>**

Internet for Mathematics is a free online tutorial to help university students develop their internet research skills

**Organisations and Institutions in Mathematics**

Organisations and Institutions in Mathematics strive for the upliftment of profession and promote research in mathematics.

**9A American Mathematical Society <http://www.ams.org/>**

The AMS was founded in 1888 to promote research in mathematical sciences. Its mission is to support mathematical education at all levels. It serves to upgrade the status of

mathematicians. It serves the national and international community through its publications, meetings, advocacy and other programs. This site contains information about AMS activities, research tools, careers and employment, meetings and conferences etc. The site has a link to the journals that it publishes and a journal article e-mail alert service.

### **9B European Mathematical Information Service**

<http://www.maths.soton.ac.uk/EMIS/index.html>

It was founded in 1995 with the support of European Mathematical Society. It serves as the central portal for electronic math resources in Europe. It has developed the largest open access electronic library in Mathematics (ELibM) as well as many other resources for mathematics.

### **9C European Mathematical Society <http://www.euro-math-soc.eu/>**

The EMS is a learned society that represents mathematicians of Europe. It furthers the interests of mathematical research, application of mathematics for social welfare. It promotes mathematical education. The EMS has as its members around 60 national societies in Europe, 40 mathematical research centres and departments and 3000 individuals. This site provides information about forthcoming events, news etc.

### **9D Mathematical Association of America (MAA) <http://www.maa.org/>**

MAA advances mathematical sciences especially at collegiate level. It promotes mathematical research and supports mathematics education. It strives for professional development.

### **9E Society for Industry and Applied Mathematics (SIAM) <http://www.siam.org/>**

SIAM pursues mathematical research and other scientific and technological developments. It works through membership activities, publication of books and journals and conferences.

### **Conclusion**

Electronic sources of information are preferred to other sources as they optimize access and value for the patrons. Electronic sources are available in multiple formats. Librarians need to be proactive in choosing electronic information resources as per the needs of clientele and budget of the library. Open access resources in the given subject should be utilised to the fullest extent. Librarians need to inculcate technological skills in their patrons for optimum utilization of resources. E-resources should be categorised and catalogued as a distinct entity for ease of access. Use of e-resources has improved user accessibility to information considerably. They tend to cater to the needs of the knowledge seekers in the most comprehensive, easiest and perspicacious way. The above bibliography shall serve as a resource tool for mathematicians and mathematics librarians in locating resources in any format in the mathematics literature. It describes methods of access to primary literary sources such as preprints etc. It is a roadmap to mathematics literature which, hopefully will help save the users from indulging in avoidably cumbersome and

wearisome process to sift the knowledge required from a bewildering mass of electronic resources, thus saving a lot of their precious time and energy.

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