Women in mathematics: Stories of overcoming

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ABSTRACT
This article explores the remarkable contribution of women to the field of mathematics throughout history. Traditionally underestimated and underrepresented in this domain, women have played crucial roles in advancing mathematical knowledge. This paper examines the lives and achievements of some notable women in mathematics, highlighting their achievements and overcoming in the face of gender barriers. The role of women in the history of mathematics is often underestimated, but their contribution is vast and significant. This article explores the beauty of this history, highlighting remarkable women who challenged gender norms to leave a lasting mark on the field. From Hypatia, a fourth-century mathematician and philosopher, to Ada Lovelace, the first programmer in history, women have played crucial roles in the evolution of mathematics. The article also addresses the long period in which women were excluded from academic institutions, even when they made substantial contributions. The narrative highlights the resilience and determination of women who persisted despite barriers. The modern era has witnessed an increase in the recognition of women's mathematical work, with figures such as Mary Cartwright and Emmy Noether standing out. The article highlights not only individual achievements, but also collective efforts to promote gender equality in mathematics. By exploring this history, the aim is to inspire a renewed appreciation for the role of women in mathematics and to encourage future generations of women to pursue their mathematical interests, thereby contributing to a more inclusive and diverse discipline.

Keywords: History, Mathematics, Women, Overcoming.

1 INTRODUCTION

The presence of women in the field of Mathematics throughout history is a complex and often neglected narrative. While women's contributions to the development of this science are undeniable, their achievements have often been overshadowed by gender stereotypes and institutional barriers. This article seeks to unravel the beautiful and inspiring history of women in mathematics, highlighting their remarkable achievements, challenges faced, and the significant impact they have had on advancing mathematical knowledge.

Over the centuries, women have faced several barriers to entering the world of academic mathematics. Social and cultural constraints limited their access to formal education and participation in research institutions, often relegating them to peripheral roles. However, even in

the face of these adversities, many women persevered and made substantial contributions, challenging established norms and paving the way for future generations.

It is crucial to highlight the specific achievements of women in the field of Mathematics who, over time, have broken down the barriers imposed by patriarchy and society. Names like Ada Lovelace, considered the first programmer, and Emmy Noether, whose theorem founded abstract algebra, are striking examples of this resistance and excellence. These women have not only contributed to the progress of mathematics but have also left an inspiring legacy for future generations of women who aspire to pursue scientific careers.

In addition, it is important to analyze the social and institutional changes that have occurred over time, allowing for greater inclusion and recognition of women. Recent initiatives aimed at gender equity and promoting diversity in the mathematical sciences are significant steps towards a more inclusive and representative community. This article seeks not only to rescue the often forgotten history of women in Mathematics, but also to reflect on the current state and future prospects for women seeking to realize their mathematical passions in a more egalitarian environment.

The article "Women in Mathematics: stories of overcoming" proposes to explore and highlight the significant contribution of women throughout the history of Mathematics, often relegated to the background. The justification lies in the importance of retelling the history of Mathematics from a more inclusive perspective, highlighting the remarkable achievements of women who, despite social and cultural barriers, played fundamental roles in the development of the discipline. The narrative seeks to undo gender stereotypes associated with Mathematics, inspiring young women to become more deeply involved in this field. Thus, the research problem of this study is: How have the contributions of women in the history of Mathematics influenced the development of this discipline and how can these contributions be more recognized and valued today?

This article aims to investigate and present the significant contribution of women throughout the history of Mathematics, highlighting their achievements, challenges faced and impact on the development of this science, in order to promote the recognition and appreciation of the female role in this field, inspiring new generations of women to become actively involved in Mathematics and contribute to the construction of a more inclusive and equitable narrative.

Another highlight of this study is that it focuses on the contemporary relevance of this topic, considering the growing recognition of the importance of diversity in science and academia. Highlighting women's mathematical contributions not only pays tribute to forgotten pioneers but

also highlights the need for a more inclusive environment for future generations. Reflection on the historical barriers faced by women can inspire concrete actions to promote gender equality in the scientific field, encouraging policies and practices that support equal access and equitable representation.

Finally, the inspiring and motivating character of the article seeks not only to educate about the history of women in Mathematics, but also to create a positive narrative that celebrates their achievements. By shining a light on the often obscured trajectories and achievements, this work aims to encourage women into mathematics by promoting the idea that their contributions are not only valuable, but essential to the continued advancement of the discipline. By providing a more holistic and inclusive view of the history of Mathematics, the article contributes to a fairer and more inspiring academic environment for all. Being of a bibliographic nature, using scientific texts, on the history of women in Mathematics, it is a contribution to the search for a more equitable and egalitarian society.

2 PIONEERING WOMEN IN MATHEMATICS

The history of mathematics is often told through narratives dominated by male figures, however, when we look closer, it is evident that women have played crucial and innovative roles in the development of this discipline over the centuries. Despite the social and cultural barriers that have historically limited women's access to education and professional opportunities, several notable women have emerged as true pioneers in mathematics, challenging stereotypes and contributing significantly to the advancement of scientific knowledge.

From the Renaissance period to the present day, women mathematicians have left an indelible mark on the field, overcoming challenges and establishing themselves as intellectual leaders. This article will explore some of these remarkable women, highlighting their accomplishments, contributions, and the lasting impact they have had on the history of mathematics. By recognizing these trailblazing women, we seek not only to honor their individual achievements, but also to inspire future generations of women to pursue their interests in Mathematics and break barriers, further expanding the horizons of this fundamental field of knowledge.

Below we will mention some of the female personalities who contributed to the development of Mathematics and scientific knowledge.

3 HYPATIA OF ALEXANDRIA

Considered the first known woman mathematician, Hypatia contributed to geometry, algebra, and astronomy. His work and teachings were fundamental for the development of Mathematics in antiquity.

Hypatia of Alexandria was a notable figure in the history of mathematics, especially during the period of Late Antiquity. She lived around the fourth century A.D. and played a significant role in preserving and transmitting the mathematical knowledge of the time. While it is important to note that the specific mathematical contributions attributed directly to her are difficult to determine due to the lack of primary sources, her influence in the mathematical field is recognized through her dedication to education, her role as a teacher, and her academic activities (FERNADEZ, AMARAL, & VIANA, 2019).

She was the daughter of the mathematician Theon of Alexandria, who was her teacher and mentor. From an early age, she showed a remarkable talent for mathematics and philosophy, and her father encouraged her to pursue knowledge and develop her skills. Although Hypatia's personal life is poorly documented, it is known that she never married or had children, dedicating herself entirely to her intellectual passions. Her family was well known and respected in Alexandria, and she enjoyed a privileged social position, which allowed her access to resources and educational opportunities that many did not have (SOUZA, 2006).

Hypatia worked to preserve and transmit the mathematical knowledge of antiquity. She was one of the last custodians of the Museum of Alexandria, which contained a vast collection of ancient manuscripts and texts. His commitment to the preservation of knowledge contributed to the continuity of the Mathematical tradition. Because

> In addition to having important works in the areas of Exact Sciences, she also dedicated herself to Philosophy and Medicine. In mathematics, his research was presented in numerous manuscripts, such as "Commentaries on the arithmetic of Diophantus". It should be noted that Diophantus of Alexandria was an important Greek mathematician of the third century B.C., considered by many scholars to be the "father of algebra". Another contribution of Hypatia was the release of commentaries on the "Elements of Euclid", which she wrote together with her father, Theon, who was a specialist in Euclidean works. She also rewrote a treatise on Apollonius' "The Conics". His reinterpretations simplified Apolônio's concepts, using a more accessible language, making it an easy manual to be followed by the interested reader (FERNANDEZ; AMARAL & VIANA, 2019, p. 12).

While many of Hypatia's original writings have been lost over time, there is evidence that she was involved in mathematical and astronomical studies. His contributions may have included commentaries on works by ancient mathematicians as well as original works. As Fernandez, Amaral and Viana (2019) point out:

> Unfortunately, many of Hypatia's contributions have been lost. Thanks to his correspondence with his pupil Synesius of Cyrene (later Bishop of Ptolemais, an ancient capital of the Roman province of Cyrenaica), we know many of his other contributions. Synesius of Cyrene shared a taste for mathematics and astronomy with his tutor, but took another direction, becoming a philosopher and bishop. Sinésio recorded Hypatia's uniqueness as an intellectual. He claims his authorship in the construction of an astrolabe, a hydrometer and a hygroscopic (FERNANDEZ; AMARAL & VIANA, 2019, p. 12).

As a teacher, Hypatia played a key role in the formation of young scholars. His teachings covered several disciplines, including mathematics, philosophy, and astronomy. Her influence as a mentor and educator helped shape the next generation of intellectuals, contributing to the continued development of mathematics. For it was in Hypatia' s special nature to treat "[...] all its students equally, being polite, tolerant and rational" (FERNANDEZ; AMARAL & VIANA, 2019, p. 12).

However, Hypatia's life was tragically cut short in 415 A.D. due to political and religious conflicts plaguing Alexandria at the time. She was brutally murdered by an angry mob of fanatical Christians, who accused her of heresy and witchcraft. His untimely death was an irreparable loss to the intellectual world of the time. Although Hypatia left a lasting legacy as one of the first prominent women mathematicians and philosophers, her personal and family life were tragically and abruptly interrupted, depriving her of the joys and accomplishments that could have been achieved in a more peaceful and tolerant context (FERNADEZ, AMARAL & VIANA, 2019).

Hypatia's legacy goes beyond her mathematical achievements. Her presence as an active and respected woman in the academic field challenged the social norms of the time, contributing to the empowerment of women in the educational and intellectual context. Hypatia's importance was so significant that she was

> [...] immortalized on the wall of the Vatican Museum by the Renaissance painter Raphael Sanzio, in his painting "The School of Athens". Voltaire and Bertrand Russell commented with appreciation on his work. Hypatia was the subject of a novel by Charles Kingsley (Hypatia, 1853). In 2011, the Spaniard Alejandro Amenabar made a film, Agora, about his life (FERNANDEZ & AMARAL, 2020, p. 3).

While the exact extent of her specific mathematical contributions remains somewhat unclear, Hypatia of Alexandria's impact on preserving knowledge and promoting education was significant for mathematics and the role of women in intellectual history.

4 ADA LOVELACE

Ada Lovelace is recognized as a crucial figure in the history of mathematics, especially in the context of computing. She is known for her significant contributions to the understanding and

development of Charles Babbage's analytical engine, a machine designed in the nineteenth century that is considered a precursor to modern computers.

Ada Lovelace was born in 1815 into an aristocratic English family. His family life was marked by a combination of privileges and challenges. Her father, the poet Lord Byron, was a controversial and absentee figure in her life, having left the family when Ada was just a baby. Her mother, Lady Byron, concerned about Lord Byron's negative influence, encouraged Ada to concentrate on her studies and mathematics. Ada had a great relationship with her mother, who supported her in her intellectual ambitions. It was through this maternal influence that Ada developed a deep interest in Mathematics and Science, and ended up becoming one of the pioneers of computing, being recognized as the first programmer in history (IBALDO & SCHWANTES, 2017).

Despite family difficulties, Ada Lovelace found a stimulating environment for her intellect. She grew up among a network of intellectuals and scientists, who frequently visited her home. These encounters provided Ada with the opportunity to engage in discussions about science and philosophy, broadening her horizons and stimulating her curious mind. In addition, Ada was fortunate to have private tutors who guided her through her education, providing her with access to advanced knowledge for the time. This combination of family and educational influences helped shape Ada Lovelace's brilliant mind and prepared her for her remarkable contributions in the field of computing (IBALDO & SCHWANTES, 2017).

Ada is often considered the first female programmer in history. She was the first to realize that Babbage's analytical engine could be programmed to perform tasks beyond simply performing mathematical calculations. His notes on the machine included an algorithm for calculating Bernoulli numbers, thus becoming the first person to create an algorithm intended to be processed by a machine.

In this context, Ibaldo and Schwantes (2017) unleash that

> In order for the analytical engine to work properly, instructions had to be provided. Ada Augusta was the person who wrote these instructions in her notes, which is currently known as the program's algorithm. In this way, Ada became the first programmer in history. She also formulated fundamental concepts for the operation of the machine (IBALDO & SCHWANTES, 2017, p. 172).

Lovelace had a unique and comprehensive view of the capabilities of the analytical engine. She realized that the machine was not limited to mathematical calculations only, but could be used to manipulate symbols and information in general. For, "Ada pondered in her notes that the

calculator could perform more than calculations, proposing the concept of universal computation, showing how her capacity for abstraction was ahead of her time" (IBALDO & SCHWANTES, 2017). This was a remarkable prediction and far ahead of its time, as Babbage's contemporaries saw the machine primarily as a calculator.

Ada Lovelace anticipated the potential of computation beyond simple mathematical calculations. She envisioned the analytical engine being used to create music, art, and generate complex patterns, demonstrating a broad understanding of the capabilities that future machines could have. As Martins (2016) points out,

> He is the author of the concept of subroutine, which consists of a sequence of instructions that can be used several times in different contexts. He discovered the importance of repetitions, so he formulated a method for the motor to repeat a series of instructions, a process known as looping, a fundamental part of imperative programming (MARTINS, 2016).

Recognition of Ada Lovelace's contribution has grown significantly over time, especially in the computer age, highlighting her pioneering role at the intersection of mathematics and computing.

According to Martins (2016)

> Ada Lovelace's contributions to the field of computer science were not discovered until the 1950s. His notes were reintroduced to the world by Bertram Vivian Bowden (1910–1989), who published them at the Symposium on Digital Computing Machines in 1953. Since then, Ada has received many posthumous honors for her work and merit. In the 80s, the ADA language, inspired by the PASCAL language, was developed and named in honor of Ada Lovelace (MARTINS, 2016).

Thus, Ada Lovelace's importance to mathematics lies in her visionary vision, her understanding of the potential of analytical engines, and her role as the first person to develop an algorithm intended to be processed by a machine, making her a crucial figure in the history of computing and mathematics.

EMMY NOETHER (1882 – 1935)

Noether revolutionized abstract algebra and number theory by developing the fundamental theorems of group theory and demonstrating the relationship between symmetry and conservation laws.

Emmy Noether was a German mathematician who lived from 1882 to 1935 and played a key role in the development of mathematics in the twentieth century.

In the family sphere, Noether was the daughter of a famous mathematician, Max Noether, which put her in contact with the academic world from an early age. She had a close relationship

with her father, who encouraged her to follow in his footsteps and believed in her exceptional talent. Although Noether never married or had children, she was known for being a friendly and affectionate person, always willing to help her classmates and students. Her personal life was characterized by a tireless dedication to mathematics and her career, and she was admired for her brilliant mind and exemplary work ethic (SOUZA, 2006).

One of the reasons why Emmy Noether's importance to mathematics is widely recognized is for the development of Noether's theorem, which establishes a fundamental relationship between symmetries and conservation laws in physics. This theorem was a crucial advance in understanding the fundamental laws of nature and had a significant impact on theoretical physics. According to Viana (2017)

> The work developed by Emmy in Göttingen consisted of assisting Hilbert and Klein in some problems related to the theory of relativity, leading to the formation of Noether's theorem, assisting in the theory of relativity and in the physics of elementary particles. His work was highly appreciated in 1918 by Albert Einstein, who thanked Noether for his penetrating mathematical thinking (VIANA, 2017, p. 4).

His work has had a profound influence on theoretical physics, particularly the theory of relativity and quantum mechanics. Noether collaborated with renowned physicists of the time, such as Albert Einstein and David Hilbert.

She also played a key role in the development of abstract algebra, working on the theory of rings, bodies, and groups. His ideas were fundamental for the understanding of algebraic structures, influencing the modern approach to algebra (SOUZA, 2006).

Despite facing challenges as a woman in a predominantly male field, Noether was recognized for her mathematical genius and received international recognition for her contributions. According to Viana (2017)

> In 1932, a year before her dismissal by the Nazi government, she and Emil Arlin were awarded the Alfred Ackermann-Teubner memorial for her contribution to the advancement of mathematical science. In addition, in honor of Emmy's fiftieth birthday, Helmut Hasse dedicated an important article for the mathematical annals to her. Finally, in September of that same year, she was the only woman invited to speak at the international congress of Mathematics (VIANA, 2017, p. 3).

Emmy Noether's work continues to be a source of inspiration for subsequent generations of mathematicians and physicists. His legacy is evident in the lasting influence his ideas have on several areas of mathematics and physics.

In addition to her involvement with mathematics, Emmy Noether was also actively involved in social and political issues. She had a progressive outlook and was an ardent advocate

for women's rights and gender equality. During her lifetime, she faced many barriers due to gender bias, but this did not stop her from making significant contributions to mathematics. Noether was also known for her reserved and humble personality, preferring teamwork and valuing intellectual collaboration. Her influence as a mathematician and as a social activist continues to be recognized and celebrated to this day (SOUZA, 2006).

In summary, Emmy Noether's importance to mathematics is immeasurable, and her innovative approach and substantial contributions continue to be studied and appreciated to this day.

6 MARY CARTWRIGHT

Recognized for her contributions to the theory of nonlinears and differential equations, Mary Cartwright was a British mathematician whose work influenced several areas of applied mathematics.

Mary Cartwright (1900-1998) was a British mathematician who made significant contributions in various areas of mathematics, playing a crucial role in the development of the discipline.

Cartwright was one of the first women to become Professor of Mathematics at the University of Oxford and made a fundamental contribution to the understanding of the theory of dynamical systems and differential equations. Her contributions have been widely recognized, and she has received several honors throughout her career, including the Sylvester Medal of the Royal Society (RIZZATO & BARBOSA, 2015).

She made notable contributions to number theory and ordinary differential equations. His research in these fields helped to expand mathematical understanding and solve challenging problems. According to Fernandez, Amaral and Viana (2019)

> In 1936 she became director of studies in mathematics at Girton College, and in 1938 she began work on a new research project which had a major impact on the direction of her research. In fact, at this time, the London Mathematical Society was asked for a mathematician who could work on problems related to certain differential equations that arose from modeling work on radio waves and radar. Cartwright was interested in working in this direction. He worked in collaboration with Littlewood, obtaining important results that greatly influenced the direction that modern dynamical systems theory adopted (FERNANDEZ, AMARAL & VIANA, 2019, p. 36).

Mary also made significant advances in dynamical systems theory, which is an area that studies the behavior over time of complex systems. His contributions helped to establish important foundations in this field. She also worked on problems related to the theory of nonlinear waves, providing valuable insights for the understanding of complex physical phenomena, all of which

had the contribution of Littlewood, a mathematician of great renown at the time (RIZZATO & BARBOSA, 2015). And according to Fernandez; Amaral and Viana (2019, p. 26) "Littlewwod also became a great collaborator of Mary, having both initiated what is now called chaos theory".

She also played an active role in mathematical organisations, including the London Mathematical Society. His leadership and participation in mathematical societies contributed to the strengthening of the mathematical community. According to Rizzato & Barbosa (2015) Cartwright

> As an administrator, she served on several committees at the University of Cambridge, including the Student Selection Committee and the Education Union, the Faculty Council, of which she was not only a member, but also acted as coordinator, and the University Council. His role in these administrative instances has always been to support new ideas, such as, for example, the creation of the Department of Veterinary Medicine in Cambridge within the area of Sciences. She was the first woman to sit on the Board of the Royal Society and was the first and only woman to preside over the London Mathematical Society (RIZZATO & BARBOSA, 2015, p. 4).

Mary also had a large part during World War II, Cartwright applied her mathematical knowledge to practical problems, working on ballistics and radar problems. His ability to solve practical problems demonstrated the applicability of mathematics in real-world situations (RIZZATO & BARBOSA, 2015).

In summary, Mary Cartwright played a crucial role in the advancement of mathematics, both in terms of theoretical contributions and the practical application of her knowledge. His work influenced several areas of mathematics and inspired subsequent generations of mathematicians.

7 CHALLENGES FACED BY WOMEN IN MATHEMATICS

Despite remarkable achievements, women in mathematics have often faced gender discrimination and difficulties in being recognized in a predominantly male environment. Limitations on access to formal education and cultural biases were common obstacles.

The presence of women in the field of Mathematics has been marked by persistent challenges throughout history. Despite social and educational advances, women still face significant obstacles when pursuing careers in this field. These challenges range from gender stereotypes to disparities in educational and professional opportunities.

One of the biggest challenges faced by women in this field is the persistence of gender stereotypes that perpetuate the idea that mathematical abilities are innate in men. This cultural bias can lead to an underestimation of women's abilities from the early school years, affecting their confidence and interest in the subject. In addition, the prejudice that women are not as fit as men in more advanced mathematical fields often results in discrimination and lack of support in academic and professional settings.

Gender disparities in education also contribute to the challenges faced by women. In many parts of the world, girls still face barriers in accessing quality education, which directly affects their ability to pursue careers in subjects such as mathematics. In addition, the lack of female role models in these fields can discourage young women from pursuing their mathematical interests, resulting in unequal representation in mathematics-related courses and professions.

In the workplace, women often face gender discrimination, whether in the form of unequal pay, lack of promotions, or exclusion from important decisions. The lack of gender diversity in the highest positions also perpetuates the idea that women do not have the aptitude to hold leadership positions. This systemic discrimination not only limits individual opportunities but also undermines the development of this field as a whole, depriving it of a variety of valuable perspectives.

Despite the challenges, many women have overcome barriers and conquered prominent positions. Women's empowerment involves promoting inclusive environments, deconstructing gender stereotypes, and implementing policies that ensure equal opportunities. As society moves towards gender equality, it is crucial to recognise and address the challenges faced by women to ensure that valuable talent is not wasted and that mathematics as a whole thrives on diversity of thought.

8 CURRENT ADVANCES AND OPPORTUNITIES

Fortunately, the landscape is changing, and more women are pursuing careers in mathematics. Initiatives to promote gender equality, such as mentoring and awareness programs, can contribute to creating a more inclusive environment. Several contemporary women stand out in areas such as topology, graph theory and artificial intelligence, showing that female potential in mathematics is vast and untapped.

Until recently, women have faced significant challenges in this field, including gender stereotypes, lack of representation, and institutional barriers. However, there is a growing awareness of the importance of gender equality in Mathematics and a number of initiatives can be developed to promote women's participation in the field. Potential advancements and current opportunities may take into account the following topics:

- Educational programs should be developed to encourage girls to become interested in Science, Technology, Engineering and Mathematics subjects from an early age. These programs need to aim to overcome stereotypes and provide successful female role models.
- Mentoring initiatives need to be created to support women at all stages of their careers. Support networks aim to provide a favorable environment to share experiences and overcome challenges.
- Organizations need to encourage research on gender in mathematics in order to better understand barriers and develop strategies to overcome them. Conferences and events dedicated to women's participation in this area need to be promoted for this purpose.
- It is crucial for academic institutions and organizations to implement policies to promote gender equality, from hiring to promoting women in leadership positions.
- It is essential to have an effort to highlight the achievements of women in Mathematics, whether through awards, recognition at conferences or publications, to increase visibility and inspire other women.
- It is essential to promote events and conferences dedicated to women in mathematics to provide an inclusive space to share knowledge, experiences, and networking opportunities.

Despite some progress, there are still persistent challenges that need to be overcome to ensure a more equitable participation of women in Mathematics. The continued promotion of an inclusive culture, the elimination of prejudice, and the effective implementation of gender equality policies are key to ensuring that women can thrive and contribute fully in this field.

9 FINAL CONSIDERATIONS

The story of women in mathematics is a narrative of resilience, talent, and valuable contributions to scientific progress. This article highlights the beauty of this often-overlooked history, encouraging recognition and celebration of the women who have shaped and continue to shape the field of mathematics. By recognizing and valuing these contributions, we foster a more inclusive and diverse environment, which is essential for the continued advancement of mathematical science.

The stories are undoubtedly a rich and inspiring narrative that deserves to be told and celebrated. Over the centuries, women have faced significant challenges and obstacles in excelling in this predominantly male field. However, his remarkable achievements, often overlooked or underestimated, contributed in a fundamental way to the development of mathematics. This research sought to rescue and highlight these contributions, revealing an intricate web of intellect, perseverance and passion.

By exploring the lives and achievements of notable women mathematicians, it became evident that gender exclusion not only limited the progress of mathematics, but also impoverished the discipline by failing to harness the full potential of diverse talents. The stories of figures such as Hypatia, Ada Lovelace, Emmy Noether, Mary Cartwright and many others offer a compelling testimony to how vital the inclusion of women in mathematics is for the expansion of knowledge and the resolution of complex problems.

In addition, it is crucial to recognize the continuous efforts to promote gender equality in Mathematics. Educational initiatives, mentorship programs, and efforts to create more inclusive environments are significant steps towards a future where women not only excel in Mathematics, but are also encouraged and supported from the beginning of their academic journeys. Promoting gender diversity not only broadens perspectives but also enriches the discipline with a variety of innovative approaches and solutions.

On this journey through the history of women in Mathematics, we can glimpse not only a narrative of overcoming, but also a call to action. It is imperative that we continue to challenge stereotypes, eliminate prejudices, and create spaces where women can thrive intellectually. In doing so, we not only honor the legacy of women mathematicians of the past, but also shape a future where gender equality is the norm, allowing everyone to fully contribute to the advancement of Mathematics and society as a whole.

REFERENCES

FERNANDEZ, Cecília de Souza; AMARAL, Ana Maria Luz Fassarella do. A história das mulheres matemáticas na escola básica. 2020. 17º Seminário Nacional de História da Ciência e da Tecnologia (ANAIS ELETRÔNICOS). UNIRIO, 23 a 27 de novembro de 2020. Disponível em: https://www.17snhct.sbhc.org.br/resources/anais/11/snhct2020/1596053530_ARQUIVO_29e9b2 57d336d546e29f1aa3b8d80824.pdf. Acesso em: 15 mar. 2024.

FERNANDEZ, Cecília de Souza; AMARAL, Ana Maria Luz Fassarella do; VIANA, Isabela Vasconcellos. A história de Hipátia e de muitas outras matemáticas. II Simpósio de Formação do Programa de Matemática da Região Sudeste. 1ª edição. 2019. Rio de Janeiro. Disponível em: https://sbm.org.br/wp-content/uploads/2022/04/Livro-A-historia-de-Hipatia-e-de-muitas-outras-matematicas.pdf. Acesso em: 23 maio 2024.

IBALDO, Adriana; SCHWANTES, Cíntia. (2017). Ada Lovelace, a encantadora de números. *Revista XIX*, *1*(4), 162–176. Recuperado de https://periodicos.unb.br/index.php/revistaXIX/article/view/21765. Acesso em: 06 maio 2024.

MARTINS, Maria do Carmo. Ada Lovelace: a primeira programadora da história. «Correio dos Açores: opinião/regional», 28 de julho de 2016: p. 14. 2016. Disponível em: https://repositorio.uac.pt/bitstream/10400.3/4025/1/Ada-Lovelace-28-julho-2016-%28digitalizacao-CA%29.pdf. Acesso em: 03 abr. 2024.

RIZZATO, Felipe; BARBOSA, Marcia Cristina. Mary Lucy Cartwright (1900-1998). 2015. Disponível em: https://www.if.ufrgs.br/~barbosa/Publications/Gender/barbosa-BOOK-MARYLUCYCARTWRIGHT-2015.pdf. Acesso em: 05 maio 2024.

SOUZA, Kátia Cristina da Silva. As mulheres na matemática. 2006. 16 f. Monografia (Graduação) – Universidade Católica de Brasília, Brasília, 2006. Disponível em: https://repositorio.ucb.br:9443/jspui/bitstream/10869/1748/1/Katia%20Cristina%20da%20Silva%20Souza.pdf. Acesso em: 13 jan. 2024.

VIANA, Isabela. A vida de Emmy Noether. (2017). Pesquisa do curso de Matemática da Universidade Federal Fluminense, Rio de Janeiro. Disponível em: http://mulheresnamatematica.sites.uff.br/wp-content/uploads/sites/237/2017/10/emmy_noether.pdf. Acesso em: 15 fev. 2024.