

**CURRICULUM VITAE  
MEHDI HASSANI**

Last update: February 7, 2021

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**Personal and Academic Information**

Personal Information:

Date of Birth: 23 July 1979.

Place of Birth: Zanjan – Iran.

Citizenship: Iranian.

Marital Status: Married.

Academic Positions:

Department of Mathematics, University of Zanjan: Associate Professor (Since November 2015).

Department of Mathematics, University of Zanjan: Assistant Professor (January 2011 – November 2015).

Administrative Positions:

Department of Mathematics, University of Zanjan: Chief of Department (November 2015 – December 2017).

Address:

Department of Mathematics (Room B3)

University of Zanjan

University Blvd., 45371-38791, Zanjan

Iran

Contact Information:

Phone (Office): +98 24 33054035

Fax (Office): +98 24 32283203

Telegram Messenger ID: @mmhassany

Personal Page on Instagram: @mmhassany

E-mail: mehdi.hassani@znu.ac.ir

Homepage: [http://www.znu.ac.ir/members/hassani\\_mehdi](http://www.znu.ac.ir/members/hassani_mehdi)

Academic Degrees Held:

■ Ph.D. of Mathematics, 2010, Cotutelle (joint) student:

▶ Institute for Advanced Studies in Basic Sciences (Gavazang–Zanjan–Iran), Supervisor: Professor Mehrdad M. Shahshahani, Advisor: Professor Rashid Zaare-Nahandi.

▶ Université Bordeaux (Talence–Bordeaux–France), Supervisor: Professor Jean-Marc Deshouillers.

■ M.Sc. of Mathematics, 2005

Institute for Advanced Studies in Basic Sciences (Gavazang–Zanjan–Iran), Supervisor: Professor Jamal Roojin.

■ B.Sc. of Mathematics, 2002

Shahid Rajaei Teacher Training University (Lavizan–Tehran–Iran).

Fields of Interest (with related Mathematics Subject Classification code):

■ Primary:

Elementary, Analytic and Probabilistic Number Theory: 11Axx, 11Bxx, 11Kxx, 11Lxx, 11Mxx, 11Nxx.

■ Secondary:

Sequences and series: 40Axx, Inequalities: 26Dxx, Approximation and expansions: 41Axx, Special functions: 33Bxx, 33Cxx, 33Exx, Combinatorics: 05Axx, History and biography: 01Axx, Mathematics education: 97Axx.

Language Skills:

Torkish (Azari) and Persian (Farsi): native language.

English: basics–medium.

Arabic and French: elementary.

Awards and Honours:

5. Specimen professor (educational and research activities) of the Faculty of Sciences in University of Zanjan, 2014.
4. Selected member of the national institute of Iranian elites (bonyad-e melli-e nokhbegan) in Zanjan, 2011.
3. I have an Erdős number of 2 (Erdős–Deshouillers–Hassani).
2. “Co-tutelle” scholarship for Ph.D. studies in Université Bordeaux (Talence–Bordeaux–France) offered by “*Service Culturel de l’Ambassade de France en Iran*”, 2007-2009.

1. Award of Dr. Prof. Manouchehr VESAL for the selected paper “Some New Inequalities Between Important Means and Applications to Ky Fan Types Inequalities (with J. Roojin)”, in 14<sup>th</sup> Seminar on Mathematical Analysis and its Applications, 4-5 February 2004, University of Science and Technology, Tehran, Iran.

### List of Publications

#### Theses. ►

Ph.D. Thesis:<sup>1</sup> On the distribution of the values of arithmetical functions, Institute for Advanced Studies in Basic Sciences (Zanjan–Iran) & Université Bordeaux (Bordeaux–France), 8 December 2010.

[Number Theory](#)

M.Sc. Thesis:<sup>2</sup> Approximation of prime number distribution functions and inequalities involving primes, 19 July 2005.

[Number Theory](#)

#### Research Reports. ►

4. Distribution of the exponents of prime numbers in factorization of factorials (in Persian), Supported by a grant of the University of Zanjan (research project number 9809), 2020.
3. Carleman’s inequality over prime numbers and arithmetic functions (in Persian), Supported by a grant of the University of Zanjan (research project number 9648), 2018.
2. Kloosterman sums and studying the problem of multiplicative inverse in modular arithmetic (in Persian), Supported by a grant of the University of Zanjan (research project number 9347), 2016.
1. On the ratio of the arithmetic and geometric means of some sequences (in Persian), Supported by a grant of the University of Zanjan (research project number 9247), 2013.

#### Classroom Notes. ►

6. Introduction to analytic number theory (in Persian).
5. Introduction to complex integration (in Persian).
4. Number Theory, Vol. 1: Fundamental Concepts (in Persian).
3. Collection of exam problems and solutions (in Persian).
2. Complement of Calculus: a collection of highly motivated problems and solutions (in Persian).
1. Introduction to the theory of distribution of prime numbers in arithmetic progressions: Theorems of Dirichlet and Linnik (in Persian).

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<sup>1</sup>Available on-line at [http://ori-oai.u-bordeaux1.fr/pdf/2010/HASSANI\\_MEHDI\\_2010.pdf](http://ori-oai.u-bordeaux1.fr/pdf/2010/HASSANI_MEHDI_2010.pdf)

<sup>2</sup>The first master thesis with full rank in Department of Mathematics in Institute for Advanced Studies in Basic Sciences, and as far as I know, the only one with full rank.

**Book Contributions.** ►

6. M. Hassani and S. Emamyari, On the maximum value of a multi-variable function. *Approximation and Computation in Science and Engineering*, Themistocles M. Rassias and Nicholas J. Daras (Eds.), Springer, to appear. [Analysis - Optimization](#)
5. M. Hassani, On the means of the non-trivial zeros of the Riemann zeta function. *Advancements in Complex Analysis*, 319–328, Breaz D., Rassias M. (Eds.), Springer, Switzerland, 2020. [Number Theory](#)
4. M. Hassani, Enumeration by e. *Modern Discrete Mathematics and Analysis: With Applications in Cryptography, Information Systems and Modelling*, 227–233, Themistocles M. Rassias and Nicholas J. Daras (Eds.), Springer, Switzerland, 2018. [Graph Theory - Enumeration : MR3887936](#)
3. M. Hassani, On the imaginary part of the non-trivial zeros of the Riemann zeta function. *Contributions in Mathematics and Engineering* (In Honor of Constantin Caratheodory), 313–321, Themistocles M. Rassias and Panos M. Pardalos (Eds.), Springer, Switzerland, 2016. [Number Theory : MR3617536](#)
2. M. Hassani, Geometric patters in uniform distribution of zeros of the Riemann zeta function. *Mathematics Without Boundaries: Surveys in Pure Mathematics*, 245–258, Themistocles M. Rassias and Panos M. Pardalos (Eds.), Springer, New York, 2014. [Number Theory : MR3330703](#)
1. M. Hassani, Explicit bounds concerning non-trivial zeros of the Riemann Zeta function. *Analytic Number Theory, Approximation Theory, and Special Functions* (In Honor of Hari M. Srivastava), 69–77, Gradimir V. Milovanovic, Michael Th. Rassias (Eds.), Springer, New York, 2014. [Number Theory : MR3329232](#)

**Journal Papers.** ►**Accepted for publication:**

- (1) M. Hassani, Conditional  $2 \times 2$  matrices with three prime elements and given determinant, *The Mathematical Gazette*. [Number Theory](#)
- (2) M. Hassani, Observations on a proof without words, *The Mathematical Gazette*. [Calculus - Trigonometry](#)
- (3) M. Hassani and M. Esfandiari, On the geometric mean of the values of positive multiplicative arithmetical functions, *Communications in Mathematics*. [Number Theory](#)
- (4) M. Hassani, On the asymptotic expansion of a generalized Smith's determinant, *Applied Mathematics E-Notes*. [Number Theory](#)
- (5) C. Axler and M. Hassani, Carleman's inequality over prime numbers, *Integers*. [Number Theory](#)
- (6) M. Hassani, Remarks on Ramanujan's inequality concerning the prime counting function, *Communications in Mathematics*. [Number Theory](#)
- (7) M. Hassani, On a difference concerning the number e and summation identities of permutations, *Journal of Inequalities and Special Functions*. [Enumerative Combinatorics](#)

**2021**

49. M. Hassani and M. Ketabi, Maclaurin series by integration, *Elemente der Mathematik*, Vol. 76 (2021), 33–37. [Calculus - Expansions : MR4201935](#)

**2020**

48. M. Hassani, Portion of primes in short intervals and Landau's inequality, *Journal of Zankoy Sulaimani - Part A*, Vol. 22 (2020), 345–352. [Number Theory](#)
47. M. Hassani and M. Marie, On the sums running over reduced residue classes evaluated at polynomial arguments, *Contemporary Mathematics*, Vol. 1 (2020), 445–450. [Number Theory](#)
46. M. Hassani, Derangements and alternating sum of permutations by integration, *Journal of Integer Sequences*, Vol. 23 (2020), Article 20.7.8 [Enumerative Combinatorics : MR4134234](#)
45. M. Hassani, On a sequence refining Carleman's inequality, *Applied Mathematics E-Notes*, Vol. 20 (2020), 336–340. [Analysis - Inequalities : MR4124497](#)

**2019**

44. M. Hassani, Tests for divisibility by prime numbers, *The Mathematical Gazette*, Vol. 103 (2019), 494–495. [Number Theory : MR4022616](#)
43. M. Hassani, Carleman's inequality over the values of Euler function and sum of divisors function, *Applied Mathematics E-Notes*, Vol. 19 (2019), 324–330. [Number Theory : MR3980743](#)

**2018**

42. M. Hassani, On the Means of the Values of Prime Counting Function, *Iranian Journal of Mathematical Sciences and Informatics*, **13** (2018), No. 1, 15–22. [Number Theory : MR3918092](#)
41. M. Hassani, Asymptotic expansions for the average of the generalized omega function, *Integers*, Vol. 18 (2018) #A23. [Number Theory : MR3783882](#)

**2017**

40. M. Hassani, A remark on the number of distinct prime divisors of integers, *Tamkang Journal of Mathematics*, Vol. 48 (2017) 13–15. [Number Theory : MR3623423](#)

**2016**

39. M. Hassani, A remark on the means of the number of divisors, *Bulletin of the Iranian Mathematical Society*, **42** (2016), No. 6, 1315–1330. [Number Theory : MR3591045](#)
38. M. Hassani, Restricted factorial and a remark on the reduced residue classes, *Applied Mathematics E-Notes*, Vol. 16 (2016), 244–250. [Number Theory : MR3608998](#)
37. M. Hassani, On the difference of the number-theoretic omega functions, *Journal of Combinatorics and Number Theory*, Vol. 8 (2016), no. 2, 165–178. [Number Theory : MR3586464](#)
36. M. Hassani, Explicit approximation of the sums over the imaginary part of the non-trivial zeros of the Riemann zeta function, *Applied Mathematics E-Notes*, Vol. 16 (2016), 109–116. [Number Theory : MR3519705](#)

**2015**

35. M. Hassani and A. Sofo, Sharp bounds for the constant  $e$ , *Vietnam Journal of Mathematics*, Vol. 43 (2015), no. 3, 629–633. [Analysis - Inequalities : MR3386067](#)

**2014**

34. M. Hassani, On a sequence related to the coprime integers, *Sahand Communications in Mathematical Analysis*, Vol. 1, No. 2 (2014), 31–37. [Number Theory](#)
33. M. Hassani, On the arithmetic-geometric means of positive integers and the number  $e$ , *Applied Mathematics E-Notes*, Vol. 14 (2014), 250–255. [Number Theory : MR3324424](#)
32. M. Hassani and A. Sofo, Identities for the volume of the unit hyperspheres, *Journal of Inequalities and Special Functions*, Vol. 5, Issue 3 (2014), 28–35. [Analysis - Special functions : MR3268379](#)

**2013**

31. M. Hassani, Remarks on the number of prime divisors of integers, *Mathematical Inequalities & Applications*, **16** (2013), No. 3, 843–849. [Number Theory : MR3134764](#)
30. M. Hassani, Uniform distribution modulo one of some sequences concerning the Euler function, *Revista de la Unión Matemática Argentina*, **54** (2013), No. 1, 55–68. [Number Theory : MR3114615](#)
29. M. Hassani, On the ratio of the arithmetic and geometric means of the prime numbers and the number  $e$ , *International Journal of Number Theory*, **9** (2013), No. 6, 1593–1603. [Number Theory : MR3103906](#)
28. M. Hassani, Uniform distribution of sequences involving divisor function, *Mathematical Communications*, **18** (2013), No. 1, 11–17. [Number Theory : MR3085785](#)
27. M. Hassani, On the Arithmetic–Geometric mean inequality, *Tamkang Journal of Mathematics*, Vol. 44 (2013) 453–456. [Analysis - Inequalities : MR3153080](#)
26. M. Hassani, Generalizations of an inequality of Ramanujan concerning prime counting function, *Applied Mathematics E-Notes*, Vol. 13 (2013) 148–154. [Number Theory : MR3141823](#)

**2012**

25. J.-M. Deshouillers and M. Hassani, A note on the distribution function of  $\varphi(p-1)/(p-1)$ , *Journal of the Australian Mathematical Society*, **93** (2012), No. 1–2, 77–83. [Number Theory : MR3061995](#)
24. M. Hassani, On a function associated with the generalized Euler constant for an arithmetic progression, *Journal of Mathematical Inequalities*, **6** (2012), No. 2, 249–252. [Number Theory : MR2977784](#)
23. M. Hassani, Factorization of factorials and a result of Hardy and Ramanujan, *Mathematical Inequalities & Applications*, **15** (2012), No. 2, 403–407. [Number Theory : MR2962243](#)
22. M. Hassani, On the distribution of a linear sequence associated to sum of divisors evaluated at polynomial arguments, *Applicable Analysis and Discrete Mathematics*, **6** (2012), No. 1, 106–113. [Number Theory : MR2952607](#)
21. M. Hassani, On an inequality of Ramanujan concerning prime counting function, *The Ramanujan Journal*, **28** (2012) No. 3, 435–442. [Number Theory : MR2950516](#)

20. A. Sofo and M. Hassani, Quadratic harmonic number sums, *Applied Mathematics E-Notes*, Vol. 12 (2012) 110–117. [Number Theory : MR2992944](#)

19. M. Hassani, On a sum related by non-trivial zeros of the Riemann zeta function, *Applied Mathematics E-Notes*, Vol. 12 (2012) 1–4. [Number Theory : MR2912505](#)

### 2011

### 2010

18. J.-M. Deshouillers and M. Hassani, Distribution modulo 1 of a linear sequence associated to a multiplicative function evaluated at polynomial arguments, *Science China Mathematics*, **53** (2010), No. 9, 2203–2206. [Number Theory : MR2718821](#)

17. M. Hassani and H. Moshtagh, On a function related by prime numbers in arithmetic progressions, *Octagon Mathematical Magazine*, Vol. 18, No. 2, October 2010, Article 2. [Number Theory](#)

### 2009

16. M. Hassani, Counting primes in the quadratic intervals, *Applied Mathematics E-Notes*, Vol.9 (2009), 297–299.

[Number Theory : MR2566323](#)

### 2008

15. M. Hassani and H. Moshtagh, A remark on a sum involving the prime counting function, *Applicable Analysis and Discrete Mathematics*, **2** (2008), No. 1, 51–55. [Number Theory : MR2396727](#)

14. A. Hoorfar and M. Hassani, Inequalities on the Lambert  $W$  Function and Hyperpower Function, *Journal of Inequalities in Pure and Applied Mathematics (JIPAM)*, Volume 9, Issue 2, Article 51, 2008. [Analysis - Special functions : MR2417333](#)

13. M. Avalin Charsooghi, Y. Azizi, M. Hassani and L. Mola-Zadeh Bidokhti, On a Result of Hardy and Ramanujan, *Sarajevo J. Math.*, Vol.4 (17) (2008), 147–153. [Number Theory : MR2483840](#)

12. M. Hassani, Identities by L-Summing Method (II), *International J. Math. Combin.*, Vol.2 (2008), 78–86.

[Computer Science : MR2435819](#)

### 2007

11. J. Roojin and M. Hassani, Some New Inequalities Between Important Means and Applications to Ky Fan - type inequalities, *Mathematical Inequalities & Applications*, **10** (2007), No. 3, 517–527.

[Analysis - Inequalities : MR2339545](#)

10. M. Hassani, A remark on the Mandl's inequality, *Octagon Mathematical Magazine*, Vol. 15 (2007), no.2, pp. 567-572. [Number Theory](#)

9. M. Hassani, Approximation of the Dilogarithm Function, *Journal of Inequalities in Pure and Applied Mathematics (JIPAM)*, Volume 8, Issue 1, Article 25, 2007.

[Analysis - Special functions : MR2295719](#)

**2006**

8. M. Hassani, Identities by L-Summing Method, *International Journal of Mathematics and Computer Science (IJMCS)*, Vol. 1, no. 2, 165–172, 2006. [Computer Science : MR2233281](#)
7. M. Hassani, Lattice Points and Multiplication Tables, *Int. J. Contemp. Math. Sci.*, Vol. 1, 2006, no. 1, 1–2. [Number Theory : MR2288672](#)
6. M. Hassani, Wilson's Theorem for Finite Fields, *Univ. Beograd, Publ. Elektrotehn. Fak., Ser. Mat.* **17** (2006), 110–111. [Algebra - Finite Fields : MR2241550](#)
5. M. Hassani, Approximation of  $\pi(x)$  by  $\Psi(x)$ , *Journal of Inequalities in Pure and Applied Mathematics (JIPAM)*, Volume 7, Issue 1, Article 7, 2006. [Number Theory : MR2217170](#)

**2005**

4. M. Bayat, H. Teimoori and M. Hassani, An Extension of  $ABC$ -Theorem, *Scientia Magna*, Vol. 1, No. 2 (2005), 81–88. [Number Theory : MR2282837](#)
3. M. Hassani, Equations and Inequalities Involving  $v_p(n!)$ , *Journal of Inequalities in Pure and Applied Mathematics (JIPAM)*, Volume 6, Issue 2, Article 29, 2005. [Number Theory : MR2132919](#)

**2004**

2. M. Hassani, Cycles in graphs and derangements, *The Mathematical Gazette*, **88** (2004), 123–126. [Graph Theory - Enumeration](#)

**2003**

1. M. Hassani, Derangements and applications, *Journal of Integer Sequences (JIS)*, Volume 6, Issue 1, Article 03.1.2, 2003. [Graph Theory - Enumeration : MR1971432](#)

Short Notes:

6. M. Hassani, AHA!, *VINCULUM*, to appear. [General](#)
5. M. Hassani, Proof without words:  $\tan^{-1} x + \tan^{-1} \frac{1-x}{1+x} = \frac{\pi}{4}$ , *The Mathematical Gazette*, to appear. [Calculus - Trigonometry](#)
4. M. Hassani and T. Mills, Taxi!, *VINCULUM*, Vol. 52, No. 1 (2015), Page 20. [Number Theory](#)
3. M. Hassani, Pondering Portrait, *MAA FOCUS*, January 2009, Page 15. [Mathematics Education](#)
2. M. Hassani, Problem 80, *Univ. Beograd. Publ. Elektrotehn. Fak. Ser. Mat.* **18** (2007), Page 84. [Geometry](#)
1. M. Hassani, M. Bayat and H. Teimoori, Proof Without Words: Extrema of the Function  $a \cos t + b \sin t$ , *Mathematical Magazine*, **77**, (4) (2004), Page 259. [Calculus](#)

Papers in Persian:

20. M. Hassani, The beauties of prime numbers, *Roshd Mathematics Education Journal (Persian)*, Vol. 38 (2020), No. 1, 3–9.



19. M. Hassani, The recent history of Mathematics of Iran, *Culture and Thought of Mathematics* (Persian), to appear.
18. M. Hassani, Concise history of number theory of Iran, *Journal of Mathematics and Society* (Persian), Vol. 2 (2017), No. 4, 51–57.
17. M. Hassani and A. Ahmadi, Empty place of the Napier number in high-school books, *Journal of Mathematics and Society* (Persian), Vol. 1 (2013), No. 3, 13–23.
16. M. Hassani, Analytic Number Theory, *Newsletter of Iranian Mathematical Society*, Vol. 35 (2013), No. 3, 1–4.
15. M. Hassani, What is the probability that two random integers are coprime?, *Bi-Karan*<sup>‡</sup>, No.1 (2012).
14. M. Hassani, Constructible Regular Polygons, *Riyaziyate Puya*<sup>‡</sup>, No.9 (2006).
13. M. Hassani, The Greatest Known Primes, *Riyaziyate Puya*, No.6 (2005).
12. M. Hassani, M. Bayat and H. Teimoori, Proof Without Words, *Riyaziyate Puya*, No.5 (2005).
11. M. Hassani, Taxi Numbers, *Riyaziyate Puya*, No.5 (2005).
10. M. Hassani, Elementary Education of Maple Software, *Riyaziyate Puya*, No.5 (2005).
9. M. Hassani, History of Prime Numbers Distribution, *Negashte*<sup>†</sup>, No.10 (2005).
8. M. Hassani, Some Wonders in Multiplication Table (II), *Riyaziyate Puya*, No.5 (2005).
7. M. Hassani, Some Wonders in Multiplication Table (I), *Riyaziyate Puya*, No.4 (2004).
6. M. Hassani, Riemann Hypothesis for High School Students, *Riyaziyate Puya*, No.3 (2004).
5. M. Hassani, The Mathematical Model of the Cassette Type, *Negashte*, No.7 (2000).
4. M. Hassani, Proof Without Words, *Negashte*, No.7 (2000).
3. M. Hassani, Multiplication Table, *Negashte*, No.6 (1999).
2. M. Hassani, Dirichlet Function, *Negashte*, No.5 (1998).
1. M. Bayat and M. Hassani, Rational and Irrational Numbers, *Proceeding of the Third Annual Iranian Mathematics Education Conference*, Kerman-Iran, (1998).

<sup>‡</sup> Journal of Mathematics House of Zanjan.

<sup>†</sup> Mathematics and Physics Journal of Sahid Rajaei University, Tehran.

<sup>‡</sup> Mathematical Journal of Farzaneghan Exceptional Talent Center, Zanjan.

#### International Conference Papers and Talks:

2. M. Hassani and T. Mills, Beyond the Rational, The MAV 52nd Annual Conference Proceedings “*Back to the Future*”, (2015) 54–60,
1. M. Hassani, On the distribution of some number theoretic sequences, *Elementare und Analytische Zahlentheorie* (Elementary and Analytic Number Theory) “*ELAZ 2012*”, Schloss Schney, (August 13-18, 2012) 18–19.

#### National Conference Papers and Talks:

34. M. Hassani, On a weighted asymptotic expansion concerning primes counting function and applications to Landau's and Ramanujan's inequalities, 51<sup>th</sup> Annual Iranian Mathematics Conference, 16-19 February 2021, University of Kashan, Kashan, Iran.
33. M. Hassani, An expansion for the prime counting function, 51<sup>th</sup> Annual Iranian Mathematics Conference, 16-19 February 2021, University of Kashan, Kashan, Iran.
32. M. Hassani, A remark on Smith's determinant, 10<sup>th</sup> Seminar on Linear Algebra and its Applications, 16-19 August 2020, University of Kerman, Kerman, Iran.
31. M. Hassani, Conditional square matrices of order 2 with given determinant, 10<sup>th</sup> Seminar on Linear Algebra and its Applications, 16-19 August 2020, University of Kerman, Kerman, Iran.
30. M. Hassani, On the distribution of the non-trivial zeros of the Riemann zeta function, 5<sup>th</sup> Seminar on Operator Theory and its Applications, 13-14 March 2019, Institute for Advanced Studies in Basic Sciences, Zanjan, Iran.
29. M. Hassani, On the uniform distribution of sequences involving the imaginary parts of the non-trivial zeros of the Riemann zeta function, 7<sup>th</sup> Seminar on Harmonic Analysis and Applications, 19-20 January 2019, Shahid Beheshti University, Tehran, Iran.
28. M. Hassani, Sharp bounds on the number of paths in simple complete graphs, 23<sup>rd</sup> Seminar on Mathematical Analysis and its Applications, 14-15 November 2018, Arak University, Arak, Iran.
27. M. Hassani, Carleman's inequality over prime numbers, 49<sup>th</sup> Annual Iranian Mathematics Conference, 23-26 August 2018, University of Elm-o-Sanat, Tehran, Iran.
26. M. Hassani, On a function related to the primes counting function, 3<sup>rd</sup> Seminar on Operator Theory and its Applications, 8-9<sup>th</sup> March 2017, Ferdowsi University of Mashhad, Mashhad, Iran.
25. M. Hassani, M. Nasiri Zare and M. R. Esfandiari, A remark on a sum concerning the prime counting function, 47<sup>th</sup> Annual Iranian Mathematics Conference, 28-31 August 2016, Kharazmi University, Karaj, Iran.
24. M. Hassani and M. R. Esfandiari, On the geometric mean of the sum divisors function, 47<sup>th</sup> Annual Iranian Mathematics Conference, 28-31 August 2016, Kharazmi University, Karaj, Iran.
23. M. Hassani, Uniform distribution of number theoretic functions, 4<sup>th</sup> Seminar on Functional Analysis and its Applications, 2-3<sup>rd</sup> March 2016, Ferdowsi University of Mashhad, Mashhad, Iran.
22. M. Hassani, On the powers of a square matrix of order two and Pell's equation, 8<sup>th</sup> Seminar on Linear Algebra and its Applications, 13-14 May 2015, University of Kurdistan, Sanandaj, Iran.
21. M. Hassani, Some remarks on a determinant related to the prime counting function, 8<sup>th</sup> Seminar on Linear Algebra and its Applications, 13-14 May 2015, University of Kurdistan, Sanandaj, Iran.
20. M. Hassani, A visual study of Weyl sums over nontrivial zeros of the Riemann zeta function, The First Conference on Computational Group Theory, Computational Number Theory and Applications, 17-19 December 2014, University of Kashan, Kashan, Iran.

19. M. Hassani, Zeros of the Riemann zeta function and explicit approximations of the prime numbers, The First Conference on Computational Group Theory, Computational Number Theory and Applications, 17-19 December 2014, University of Kashan, Kashan, Iran.
18. M. Hassani, Explicit sharp bounds for primes counting function, 21<sup>th</sup> Seminar on Mathematical Analysis and its Applications, 26-27 November 2014, Islamic Azad University, Hamedan, Iran.
17. M. Hassani, Why Legendre made a wrong guess about the primes counting function?, 21<sup>th</sup> Seminar on Mathematical Analysis and its Applications, 26-27 November 2014, Islamic Azad University, Hamedan, Iran.
16. M. Hassani, Some beauties of the non-real zeros of the Riemann zeta function, 45<sup>th</sup> Annual Iranian Mathematics Conference, 26-29 August 2014, University of Semnan, Semnan, Iran.
15. M. Hassani, Optimal design of channel sections: a mathematical approach, 45<sup>th</sup> Annual Iranian Mathematics Conference, 26-29 August 2014, University of Semnan, Semnan, Iran.
14. M. Hassani, Smith's determinant over multiplicative functions, 7<sup>th</sup> Seminar on Linear Algebra and its Applications, 26-27th February 2014, Ferdowsi University of Mashhad, Mashhad, Iran.
13. M. Hassani, Two problems in analytic number theory with same solutions, 43<sup>rd</sup> Annual Iranian Mathematics Conference, 27-30 August 2012, University of Tabriz, Tabriz, Iran.
12. M. Hassani, Explicit bounds for sums over non-trivial zeros of the Riemann zeta function evaluated at differentiable functions, 20<sup>nd</sup> Seminar on Mathematical Analysis and its Applications, 9-11 July 2012, University of Maragheh, Maragheh, Iran.
11. M. Hassani, Analytic tools and methods for studying distribution of primes in arithmetical progressions, 20<sup>nd</sup> Seminar on Mathematical Analysis and its Applications, 9-11 July 2012, University of Maragheh, Maragheh, Iran.
10. M. Hassani, Symmetric expressions of non-zero elements of finite fields, 22<sup>nd</sup> Iranian Algebra Seminar, 31 Jan - 2 Feb, 2012, Sabzevar Teacher Training University, Iran.
9. M. Hassani, Three dimensional geometric aspect of Weyl sums, 42<sup>nd</sup> Annual Iranian Mathematics Conference, 5-8 September 2011, Vali-e-Asr University of Rafsanjan, Iran.
8. M. Hassani, Approximation of the Growth of a Number Theoretic Determinant, 6<sup>th</sup> Seminar on Linear Algebra and its Applications, 8-9 June 2011, Arak University, Arak, Iran.
7. M. Hassani, On the Decomposition of  $n!$  into Prime Numbers, 18<sup>th</sup> Seminar on Mathematical Analysis and its Applications, April 15-16, 2009, TMU, Iran.
6. M. Hassani, Machinery of Rosser-Schoenfeld Method for Explicit Approximating of Primers, 16<sup>th</sup> Seminar on Mathematical Analysis and its Applications, February 4-5, 2007, Ferdowsi University, Mashhad, Iran.
5. M. Hassani, Counting and Computing by  $e$ , 35<sup>th</sup> Annual Iranian Mathematics Conference, January 26-January 29, 2005, Shahid Chamran University, Ahwaz, Iran.

4. M. Hassani, Some New Inequalities Between Important Means and Applications to Ky Fan Types Inequalities (with J. Roojin), 14<sup>th</sup> Seminar on Mathematical Analysis and its Applications, February 4-5, 2004, Iran University of Science and Technology, Tehran, Iran.
  3. M. Hassani, Derangements, The Fourth Student Seminar on Mathematics, March 16-18, 2002, Shiraz University, Shiraz, Iran.
  2. M. Hassani, What is the Probability That  $GCD$  of Two Positive Integers is  $h$ ? The First Student Seminar of Al-Zahra Teacher Training Center, September 4-5, 2000, Zanjan, Iran.
  1. M. Hassani, Number  $e$  and Graphs, The Second Student Seminar on Mathematics, March 29-31, 1999, Sharif University of Technology, Tehran, Iran.
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### Professional Service

#### Editorial services:

1. Editorial board of *Newsletter of the Iranian Mathematical Society* (September 2012 - September 2015).

#### Scientific and organizing committee:

4. Maryam Mirzakhani Foundation Training Courses, The first training course, 11-13 May 2020.
3. Scientific committee: Mathematics House of Zanjan, Since 2011.
2. Scientific and organizing committee, and also an instructor of the WAMS-CIMPA Summer School: Topics in Analytic and Transcendental Number Theory, 1-13 July 2017, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran.
1. Organizing committee: The 5<sup>th</sup> Seminar on Functional Analysis and its Applications, 12-13 July 2017, Department of Mathematics, University of Zanjan, Zanjan, Iran.

#### Refereed articles for the following journals and seminar proceedings:

16. Communications in Mathematics (ISSN 1804-1388)
15. Mathematics Magazine (ISSN 0025-570X).
14. Journal of Mathematics and Society (Persian – Nashriyeh Riyazi va Jame, ISBN 2345-6493).
13. The Bulletin of the Iranian Mathematical Society (ISBN 1017-060X).
12. American Mathematical Monthly (ISBN 0002-9890).
11. The Culture and Thought of Mathematics (Persian – Farhang va Andisheye Riyazi, ISBN 1022-6443).
10. Journal of Mathematical Extension (ISBN 1735-8299).
9. Journal of Inequalities and Applications (ISSN 1029-242X).
8. Applied Mathematics E-Notes (ISSN 1607-2510).
7. Electronic Journal of Combinatorics (E-JC, ISSN 1077-8926).
6. Pakistan Journal of Statistics (ISSN 1012-9367).

5. Applied Mathematics Letters, (ISSN 0893-9659, PERGAMON).
4. Sarajevo Journal of Mathematics, (ISSN 1840-0655, Printed edition).
3. Studia Scientiarum Mathematicarum Hungarica (HU ISSN 0081-6906).
2. Journal of Zhejiang University SCIENCE (ISSN 1009-3095, Monthly).
1. International Symposium on Geometric Function Theory and its Applications (GFTA 2008), Universiti Kebangsaan, Malaysia, November 10-13, 2008.

Reviews:

■MathSciNet ■ZentralblattMATH ■MAA

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|---|-------------------------------------|
| 3. Reviewer of Mathematical Reviews - MathSciNet        | 2 books <sup>†</sup> and 200 papers |
| 2. Reviewer of Zentralblatt MATH                        | 3 books <sup>‡</sup> and 215 papers |
| 1. Book Reviewer of Mathematical Association of America | 42 books <sup>‡</sup>               |

<sup>†</sup>List of reviewed books for Mathematical Reviews:

2. Ranjan Roy, *Sources in the Development of Mathematics: Series and Products from the Fifteenth to the Twenty-first Century*, Cambridge (2011), 994 pages.
1. Annie Cuyt, Vigdis Brevik Petersen, Brigitte Verdonk, Haakon Waadeland, William B. Jones, *Handbook of Continued Fractions for Special Functions*, Springer (2008), 431 pages.

<sup>‡</sup>List of reviewed books for Zentralblatt MATH:

3. Ross G. Pinsky, *Problems from the Discrete to the Continuous (Probability, Number Theory, Graph Theory, and Combinatorics)*, Springer (2014), 154 pages.
2. Yury A. Brychkov, *Handbook of special functions: Derivatives, integrals, series and other formulas*, CRC Press (2008), 680 pages.
1. Alina Sintămărian, *A generalization of Euler's constant*, Cluj-Napoca (2008), 150 pages.

<sup>‡</sup>List of reviewed books for Mathematical Association of America:

42. Walter Dittrich, *Reassessing Riemann's Paper On the Number of Primes Less Than a Given Magnitude*, Springer (2018), 65 pages.
41. Martin H. Weissman, *An Illustrated Theory of Numbers*, AMS (2017), 323 pages.
40. Titu Andreescu and Sean Elliott, *114 Exponent and Logarithm Problems from the AwesomeMath Summer Program*, XYZ Press (2017), 200 pages.
39. Roland van der Veen and Jan van de Craats, *The Riemann Hypothesis*, MAA Press (2016), 144 pages.
38. Eli Maor, *e : The Story of a Number*, Princeton University Press (1994), 227 pages.
37. Roger B. Nelsen, *Cameos for Calculus: Visualization in the First-Year Course*, MAA Press (2015), 186 pages.
36. Peter Bullen, *Dictionary of Inequalities (Second Edition)*, CRC Press (2015), 370 pages.
35. Gérald Tenenbaum, *Introduction to Analytic and Probabilistic Number Theory (Third Edition)*, AMS (2015), 629 pages.

34. Maurice Heins, *Selected Topics in the Classical Theory of Functions of a Complex Variable*, Dover Publications (2015), 176 pages.
33. Titu Andreescu, *Essential Linear Algebra with Applications (A Problem-Solving Approach)*, Springer (2014), 491 pages.
32. Henryk Iwaniec, *Lectures on the Riemann Zeta Function*, AMS (2014), 119 pages.
31. Peter R. Mercer, *More calculus of a Single Variable*, Springer (2014), 411 pages.
30. Tsuneo Arakawa, Tomoyoshi Ibukiyama, Masanobu Kaneko, *Bernoulli Numbers and Zeta Functions*, (with an appendix by Don Zagier), Springer (2014), 274 pages.
29. Aleksandar Ivić, *The Theory of Hardy's Z-Function*, Cambridge University Press (2013), 245 pages.
28. David Applebaum, *Limits, Limits Everywhere: The Tools of Mathematical Analysis*, Oxford University Press (2014), 200 pages.
27. Phoebus J. Dhrymes, *Mathematics for Econometrics (4th ed.)*, Springer (2013), 419 pages.
26. Achim Klenke, *Probability Theory (2nd ed.)*, Springer (2014), 638 pages.
26. David J. Gryniewicz, *Structural Additive Theory*, Springer (2013), 426 pages.
25. Donald Yau, *A First Course in Analysis*, World Scientific (2013), 195 pages.
24. Elimhan Mahmudov, *Single Variable Differential and Integral Calculus: Mathematical Analysis*, Atlantis Press (2013), 373 pages.
23. José Luis Gómez Pardo, *Introduction to Cryptography with Maple*, Springer (2013), 705 pages.
22. Alan Baker, *A Comprehensive Course in Number Theory*, Cambridge (2012), 251 pages.
21. Jean-Marie De Koninck, Florian Luca, *Analytic Number Theory: Exploring the Anatomy of Integers*, American Mathematical Society (2012), 414 pages.
20. M. W. Wong, *Discrete Fourier Analysis*, Birkhäuser (2011), 176 pages.
19. Eric Temple Bell, *The Magic of Numbers*, Dover Publications (1991), 418 pages.
18. Rinaldo B. Schinazi, *Probability with Statistical Applications (second edition)*, Birkhäuser (2012), 347 pages.
17. Michael Th. Rassias, *Problem-Solving and Selected Topics in Number Theory*, Springer (2011), 324 pages.
16. Marvin Marcus, Henryk Minc, *A survey of matrix theory and matrix inequalities*, Dover Publications (1992), 180 pages.
15. Frank W. J. Olver, *Asymptotics and Special Functions*, CRC Press (2010), 572 pages.
14. Richard K. Guy, *Unsolved Problems in Number Theory (third edition)*, Springer (2004), 438 pages.
13. Richard A. Mollin, *Fundamental Number Theory with Applications*, CRC Press (2008), 368 pages.
12. Annie Cuyt, Vigdis Brevik Petersen, Brigitte Verdonk, Haakon Waadeland, William B. Jones, *Handbook of Continued Fractions for Special Functions*, Springer (2008), 431 pages.

11. Martin Erickson, *Pearls of Discrete Mathematics*, CRC Press (2010), 270 pages.
10. Harold N. Shapiro, *Introduction to the Theory of Numbers*, Dover Publications (2008), 459 pages.
9. Edwin Beckenbach, Richard Bellman, *An introduction to inequalities*, Mathematical Association of America (1975), 133 pages.
8. Underwood Dudley, *A Guide to Elementary Number Theory*, Mathematical Association of America (2009), 139 pages.
7. Gérald Tenenbaum, *Introduction to Analytic and Probabilistic Number Theory*, Cambridge (1995), 448 pages.
6. M. Ram Murty, *Problems in Analytic Number Theory*, Springer (2008), 502 pages.
5. Harold Davenport, *Multiplicative Number Theory*, Springer (2000), 177 pages.
4. Victor Henner, Tatyana Belozerova, Kyle Forinash, *Mathematical Methods in Physics: Partial Differential Equations, Fourier Series, and Special Functions*, A K Peters (2009), 841 pages.
3. Amparo Gil, Javier Segura, Nico M. Temme, *Numerical Methods for Special Functions*, SIAM (2007), 417 pages.
2. Jan C. A. Boeyens, Demetrius C. Levendis, *Number Theory and the Periodicity of Matter*, Springer (2008), 374 pages.
1. Glyn Harman, *Prime-Detecting Sieves*, Princeton University Press (2007), 376 pages.

### Participation in Mathematical Activities

#### International:

2. Explicit Methods in Number Theory (in honour of Henri Cohen), Bordeaux, France - October 2007, Monday 15th - Friday 19th.
1. CIMPA-UNESCO-LEBANON, Summer School: Algebraic Geometry and Arithmetic of Curves, Center for Advanced Mathematical Sciences (CAMS), American University of Beirut, Beirut, Lebanon, July 5-16, 2004.

#### National:

7. 36<sup>th</sup> Iranian Mathematical Undergraduate Tournament (as team supervisor), 15-18 May 2012, Institute for Advanced Studies in Basic Sciences, Zanjan, Iran.
6. 35<sup>th</sup> Iranian Mathematical Undergraduate Tournament (as team supervisor), 3-7 May 2011, Shahid Beheshti University, Tehran, Iran.
5. 36<sup>th</sup> Annual Iranian Mathematics Conference, September 10-13, 2005, Yazd University, Yazd, Iran.
4. Second Mathematics Workshop (as instructor), October 28, 2004, Farzaneghan Exceptional Talent Center, Zanjan, Iran.

3. The First Computer and E-Learn Seminar, April 29-30, 2004, Shahid Beheshti Exceptional Talent Center, Zanjan, Iran.
2. 34<sup>th</sup> Annual Iranian Mathematics Conference, August 30-September 2, 2003, Shahrood University of Technology, Shahrood, Iran.
1. The First Mathematics Congress of Zanjan's Exceptional Talent Centers (as referee), July 15-16, 2002, Shahid Beheshti Exceptional Talent Center, Zanjan, Iran.

#### Memberships:

6. Iranian Mathematical Society: permanent member.
5. National Institute of Iranian Elites (bonyad-e melli-e nokhbegan).
4. American Mathematical Society: 2004 - present.
3. Mathematical Association of America: 2005 - 2007.
2. Research Group in Mathematical Inequalities and Applications: 2003 - present.
1. Working Group on Generalized Convexity: 2007 - present.

### **Student Supervision, Teaching, Speeches**

#### Ph.D. students supervised:

1. Mohammadreza Esfandiari, *On the means of the number theoretic sequences*, June 2020.

#### M.Sc. students supervised:

17. Mohammad Bigdeli, *Identities and inequalities involving volume and area of hyperspheres*, February 2019.
16. Masoumeh Bakhshi, *Alternative sums over multiplicative functions*, February 2019.
15. Fatemeh Ayareh, *On the distribution of sequences involving Euler function and sum of divisors function*, September 2017.
14. Mohammad-Sadegh Ghaneei Bafghi, *Completely monotonic functions and its applications in number theory* (Co-supervisor: Prof. Ali Morassaei), September 2017.
13. Narges Dousti, *On the difference of the number-theoretic omega functions*, September 2017.
12. Masoud Mohammadi, *On the sequences involving prime numbers*, September 2017.
11. Hamed Zanganeh, *Studying of asymptotic growth of the least primitive root of a prime numbers*, January 2017.
10. Mahin Ahmadi, *Studying the primes counting function*, September 2016.
9. Saeed Beirami, *Series and identities involving harmonic numbers*, September 2016.
8. Vahid Rahmani Soltaniyeh, *On the GCD sums*, September 2015.
7. Mostafa Najafi, *Studying an inequality of Ramanujan concerning the prime counting function and some of its generalizations*, September 2015.



6. Zahra Hassanloo, *Sum of the fractional part and some generalizations of the Euler's constant*, September 2015.
5. Hassan Hassani Reisani, *Studying imaginary part of the non-trivial zeros of the Riemann zeta function*, September 2015.
4. Najmeh Dehghanpour, *On the ratio of the arithmetic and geometric means of the prime numbers*, September 2014.
3. Mohammad Ghorbani, *Average order of the Omega functions*, September 2014.
2. Nahid Nasser, *Various inequalities and approximations for the Euler Gamma function and some related functions*, October 2012.
1. Jamal Māleki, *Zero free regions for the Riemann zeta function* (Co-supervisor: Prof. Jamal Roojin), September 2012.

#### Speeches:

42. Mathematics, Education, Research, University of Zanjan, Zanjan, 2019.
41. Prime Numbers, Divisibility Tests, Fermat Numbers and Constructable Polygons, Introduced 2 times in Farzanegan Exceptional Talent Centre, Zanjan, 2018.
40. On the number  $e$ , University of Zanjan, Zanjan, 2017.
39. The Riemann Hypothesis, University of Zanjan, Zanjan, 2016.
38. Mathematical works of Fermat, Zanjan Mathematics House, Zanjan, 2014.
37. Rational and Irrational Numbers, Zanjan Mathematics House, Zanjan, 2013.
36. Prime Numbers (university version), University of Zanjan, Zanjan, 2013.
35. Prime Numbers (high school version), Introduced 2 times in Shahid Beheshti Exceptional Talent Centre and Farzanegan Exceptional Talent Centre, Zanjan, 2013.
34. About the number  $\pi$ , Introduced 2 times in Zanjan Mathematics House and Roozbeh High School of Zanjan, Zanjan, 2013.
33. Number  $e$  in high school mathematical courses, Zanjan Mathematics House, Zanjan, 2012.
32. How we can do mathematical research in high school?, Minister of Education (Zanjan Office), Zanjan, 2011.
31. What is the probability that two random integers are coprime?, Zanjan Mathematics House, Zanjan, 2011.
30. On the Distribution of some Number Theoretic Sequences, Ferdowsi University of Mashhad, Mashhad, 2011.
29. Uniform Distribution Modulo 1 of Arithmetic Functions, IASBS, Zanjan, 2010.
28. Distribution of Primes, IASBS, Zanjan, 2009.
27. Primes in Arithmetic Progressions, IMB, Talence – Bordeaux, 2009.
26. Distribution of the Arithmetic Functions, IASBS, Zanjan, 2008.
25. Inequalities Involving Prime Numbers, IMB, Talence – Bordeaux, 2007.

24. What is L-Summing Method? IASBS, Zanjan, 2007.
23. Distribution of Prime Numbers in Arithmetic Progressions, IASBS, Zanjan, 2007.
22. Primes in Arithmetic Progressions, IASBS, Zanjan, 2007.
21. About  $n!$ , IASBS, Zanjan, 2006.
20. Wilson's Theorem for Finite Fields, Open University of Zanjan, 2006.
19. Wilson's Theorem for Finite Fields, IASBS, Zanjan, 2006.
18. Mathematical Dexterity, Open University of Zanjan, 2006.
17. Unrestricted Partition Function, IASBS, Zanjan, 2004.
16. Counting and Computing by e, IASBS, Zanjan, 2004.
15. Inequalities Involving  $v_p(n!)$  and Study of the Equation  $v_p(n!) = k$ , IASBS, Zanjan, 2004.
14. About the Riemann Hypothesis, IASBS, Zanjan, 2004.
13. Elliptic Functions, IASBS, Zanjan, 2004.
12. Discrete Logarithm Problem, IASBS, Zanjan, 2004.
11. What is the probability that two integers are coprime?, IASBS, Zanjan, 2003.
10. Multiplication Table Theorem, IASBS, Zanjan, 2003.
9. The Riemann Zeta Function and Distribution of Primes, IASBS, Zanjan, 2003.
8. Reciprocal of the Primes, IASBS, Zanjan, 2002.
7. Number e and Graphs, IASBS, Zanjan, 2002.
6. Beautiful Mathematics, SRTTU, Tehran, 2000.
5. Rational and Irrational Numbers, SRTTU, Tehran, 1999.
4. Multiplication Table, IASBS<sup>3</sup>, Zanjan, 1999.
3. Mathematical Model of the Cassette Type, SRTTU, Tehran, 1999.
2. A Figure with Finite Area and Infinite Perimeter, SRTTU, Tehran, 1998.
1. Number e and Graphs, SRTTU<sup>4</sup>, Tehran, 1998.

#### Graduate Courses Taught:

3. Distribution Theory: University of Zanjan  
Spring 2015, Fall-Winter 2016 (Chapters 8–22 Davenport's Multiplicative Number Theory).
2. Advanced Number Theory: University of Zanjan  
Fall-Winter 2013 (Dirichlet's theorem for the primes in arithmetical progression, from De Koninck and Luca's Analytic Number Theory; a selection of topics in distribution of prime numbers and theory of the Riemann zeta function, from Davenport's Multiplicative Number Theory; elliptic functions, from Apostol's Modular Functions and Dirichlet Series in Number Theory; lattices, from Stewart and Tall's Algebraic Number Theory and Fermat's Last Theorem).

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<sup>3</sup>Institute for Advanced Studies in Basic Sciences.

<sup>4</sup>Sahid Rajaei Teacher Training University.

1. Analytic Number Theory: University of Zanjan  
 Fall-Winter 2014, Spring 2014, Fall-Winter 2012 (Tenenbaum's Introduction to Analytic and Probabilistic Number Theory),  
 Fall-Winter 2011 (Apostol's Introduction to Analytic Number Theory).

A Selection of Undergraduate Courses Taught:

19. Engineering Mathematics: University of Zanjan (for Mathematics students), Spring 2018, Fall-Winter 2018.
18. Fundamental Number Theory: University of Zanjan (for Mathematics students), All semesters since 2011.
17. Calculus III: University of Zanjan (for Mathematics students), Fall-Winter 2011, Spring 2012, Spring 2017, Fall-Winter 2017.
16. Ordinary Differential Equations: University of Zanjan (for Engineering students), Spring 2011.
15. Calculus II: University of Zanjan (for Engineering students), Spring 2011, Fall-Winter 2012, Spring 2018.
14. Calculus II: University of Zanjan (for Chemistry students), Spring 2011.
13. Calculus I: University of Zanjan (for Chemistry students), Spring 2011.
12. Calculus III: Institute for Advanced Studies in Basic Sciences (for IT students), Spring 2010.
11. Discrete Mathematics: Institute for Advanced Studies in Basic Sciences (for IT students), Spring 2009.
10. History of the Mathematics: Free University of Zanjan, Summer 2006 & Summer 2007 (two summer semesters).
9. Fundamental Number Theory: Open University of Zanjan (for Mathematics students), Spring 2006 & Winter-Spring 2007 (two semesters).
8. Calculus III: Open University of Zanjan (for Mathematics students), Fall-Winter 2006.
7. Calculus II: Open University of Zanjan & Free University of Zanjan (for Mathematics, IT, Computer Science and Accountancy students), Fall 2005-Spring 2007 (all semesters).
6. Calculus I: Open University of Zanjan & Free University of Zanjan (for Mathematics, IT, Computer Science and Accountancy students), Fall 2005-Spring 2007 (all semesters).
5. Maple V Software - Elements and Elementary Programming: Open University of Zanjan, Summer 2005.
4. Number Theory Problem Solving: University of Zanjan, Spring, Fall-Winter 2004 (two semesters).
3. Fundamental Number Theory - Preparing to Olympiad: Shahid Beheshti Exceptional Talent Centre, Winter 2003.
2. Calculus Problem Solving: University of Zanjan, Fall-Winter 2003.
1. Elements of Maple V Software: Shahid Rajaei Teacher Training University, Fall-Winter 1999.