1973-2016 INDEX of PROBLEMS & SOLUTIONS

VOLUMES 1-47.5

for

THE COLLEGE MATHEMATICS JOURNAL

(Including the TWO YEAR COLLEGE MATHEMATICS JOURNAL)

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Notes:

1. All entries are in the format:

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Proposer, Volume .Issue Number(Year)Page of publication
Topic of problem as interpreted by the indexer
Solution Title determined by the Problem Editors **Volume .Issue Number(Year)Page**

2. The Two Year College Mathematics Journal began publishing in 1970, but the problem section did not begin until Volume 4 in 1973.
3. Please report any errors or omissions to the indexer at <charliecook29150@aim.com>.
4. ***** indicates problems for which a Solution is pending.

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Solution: Limiting ratios of areas 33.5(2002)413
714.
Proposer: Arthur L. Holshouser & Harold B. Reiter 32.5(2001)382
Topic: Adapting strategies in the game of Blocking Nim
Solution: Blocking Nim 33.5(2002)414

715.
Proposer: M. N. Deshpande 32.5(2001)382
Topic: Equality of products of distances from lines constructed in a triangle
Solution: A triangle identity 33.5(2002)416
716.
Proposer: Cecelia A. Weajley & William D. Weakley 33.1(2002)54
Topic: Uniquely determined values of a function defined on sets of real numbers
Solution: Reminiscent of inclusion-exclusion 34.1(2003)69
717.
Proposer: Erwin Just 33.1(2002)54
Topic: Find an increasing finite set of integers each dividing the sum of squares of each one
Solution: Divisibility and sums of powers 34.1(2003)70
718.
Proposer: Norman Schaumberger 33.1(2002)54
Topic: Inequality involving ratios and powers of 2 positive numbers > 1
Solution: An application of concavity 34.1(2003)70
719.
Proposer: Wu WeiChao 33.1(2002)55
Topic: Necessary & sufficient condition that a function satisfies a 2-variable given equation
Solution: A projection in disguise 34.1(2003)71
720.
Proposer: Andrew Cusumano 33.1(2002)55
Topic: Limit of the difference of 2 ratios of sequences of integers
Solution: Not an easy “e”asy limit
721.
Proposer: Kent Holing 33.2(2002)150
Topic: Necessary & sufficient condition that a quadrilateral related to a triangle is cyclic
Solution: Untitled 34.2(2003)154
722.
Proposer: Juan-Bosco Romero Márquez 33.2(2002)150
Topic: A function of x depends on 3 exponents. Find values of the 3 that will guarantee a right or left hand limit of the function as x approaches 1, and find the limit.
Solution: Untitled 34.2(2003)155
723.
Proposer: David Bloom 33.2(2002)150
Topic: Proving certain properties of a given ring with unity
Solution: Untitled 34.2(2003)156
724.
Proposer: Wu Wei Chao 33.2(2002)151
Topic: Find a geometric characterization that a given sequence is periodic
Solution: Untitled 34.2(2003)157

725.
Proposer: Andrew Cusumano 33.2(2002)151
Topic: Find the limit of a sum as a function of the number of terms summed
Solution: Untitled 34.2(2003)158
726.
Proposer: Thomas J. Pfaff 33.3(2002)240
Topic: Limit of a summation sequence of cosecants if it exists
Solution: A limit involving the x/ sin(x) approximation 34.3(2003)240
727.
Proposer: Yves Nievergelt 33.3(2002)240
Topic: Rank 4 terms involving 2 variables in increasing order
Solution: Rational function inequalities 34.3(2003)241
728.
Proposer: Erwin Just 33.3(2002)240
Topic: Determining weights of coins in identical bags
Solution: A coin-weighing problem 34.3(2003)242
729.
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Topic: Inequality for the mean and standard deviation of a concave up survival function
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730.
Proposer: Jerome Minkus 33.3(2002)241
Topic: Properties relating to a triangle with a trisected angle
Solution: Similarity invariants for an angle trisection 34.3(2003)244
731.
Proposer: Michael Scott McClendon 33.4(2002)325
Topic: Find the volume of airspace for a plane attached to a spherical planet
Solution: The airspace of a tethered airplane 34.4(2003)328
732.
Proposer: Ron Rietz 33.4(2002)325
Topic: Inequalities for a logarithmic function and summing the digits in a decimal
Solution: Not quite an integer 34.4(2003)329
733.
Proposer: William Seaman 33.4(2002)325
Topic: Existence of a 1-1 function defined on certain subsets of n elements
Solution: A marriage of sets 34.4(2003)330
734.
Proposer: Michael Bataille 33.4(2002)326
Topic: Find the gcd's of consecutive terms in recursive sequences
Solution: Greatest common divisors in linear recurrence 34.4(2003)331

735.
Proposer: Norman Bolton 33.4(2002)326
Topic: Probability that n persons with assigned seats sit in the correct one
Solution: Finding the right seat 34.4(2003)332
736.
Proposer: Samuel A. Truitt, Jr. 33.5(2002)410
Topic: Describe sets of values that satisfy a sine and those that satisfy a cosine equation
Solution: Special cases of angle sum formulas 34.5(2003)406
737.
Proposer: Thomas J. Pfaff 33.5(2002)410
Topic: Can a complete graph be partitioned into edge disjoint paths?
Solution: Yet another proof that $1 + 2 + \cdots + (n - 1) = C(n,2)$ 34.5(2003)408
738.
Proposer: Nora Thornber 33.5(2002)411
Topic: Initial value problem for an n-dimensional vector function
Solution: An initial value problem 34.5(2003)408
739.
Proposer: Arthur L Holshouser 33.5(2002)411
Topic: Winning strategies for a counter removing game
Solution: Strategies in a two-person game 34.5(2003)409
740.
Proposer: Richard F. McCoart, Jr. 33.5(2002)411
Topic: Perturbing the birth dates of Niels Bohr and Werner Heisenberg
Solution: Not just another Bohring question 34.5(2003)410
741.
Proposer: Karl Havlak & Charles Diminnie 34.1(2003)68
Topic: Limits of 2 sequences of ratios of positive numbers
Solution: A pair of similar limits 35.1(2004)56
742.
Proposer: Harris Kwong 34.1(2003)68
Topic: Inequality involving polynomial sequences
Solution: A polynomial inequality 35.1(2004)57
743.
Proposer: Najib N. Yazbak 34.1(2003)68
Topic: System of 2 equations in 3 variables
Solution: Exponential Diophantine equations 35.1(2004)58
744.
Proposer: Vassilios C. Hombas 34.1(2003)69
Topic: Evaluating a function with 2^{nd} derivatives appearing in a converging sum at 1
Solution: A functional equation 35.1(2004)59

745.
Proposer: Rex H. Wu 34.1(2003)69
Topic: Divisibility and cardinality of a function yielding prime values
Solution: Dividing m! But not (m - 1)! Revisited 35.1(2004)56
746.
Proposer: Emily Just & Erwin Just 34.2(2003)153
Topic: Existence of an integer from sums of integers assigned to n-gon mid and end points
Solution: There are no magic (2n + 1)-gons 35.2(2004)137
747.
Proposer: Josè Luis Díaz-Barrero 34.2(2003)153
Topic: Fibonacci number summation inequality
Solution: An inequality with Fibonacci numbers 35.2(2004)138
748.
Proposer: Kent Holing 34.2(2003)154
Topic: Areas of shaded regions in a given configuration
Solution: Shades of Pythagoras 35.2(2004)139
749.
Proposer: Michael W. Ecker 34.2(2003)154
Topic: Existence of fully diversified sequences
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750.
Proposer: Angelo S. DiDomenico 34.2(2003)154
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751.
Proposer: Seth Zimmerman 34.3(2003)239
Topic: Evaluation of sums involving the cardinality and products of integers in a set
Solution: A productive sum and its alternating counterpart 35.3(2004)228
752.
Proposer: Juan-Bosco Romero Márquez 34.3(2003)239
Topic: Exponential Diophantine equation in 2 variables
Solution: An asymmetric Diophantine equation 35.3(2004)229
753.
Proposer: Youngge Tian 34.3(2003)239
Topic: Identity involving the ranks of 2 idempotent matrices
Solution: A rank identity 35.3(2004)230
754.
Proposer: Andrew Cusumano 34.3(2003)240
Topic: Proving the existence of a positive sequence and finding its recurrence relation
Solution: A Stirling argument 35.3(2004)230

755.
Proposer: Dean Hoffman & Peter Johnson 34.3(2003)240
Topic: Strategy needed to maximize the expected value in a gambling game
Solution: Strategy is unnecessary 35.3(2004)232
756.
Proposer: Michael Bataille 34.4(2003)327
Topic: Identity for the 6-term sum of ratios of sines
Solution: A trigonometric identity 35.4(2004)312
757.
Proposer: W. V. Grounds 34.4(2003)327
Topic: Finding primes obtained from 2 different 4^{th} degree polynomials in 2 variables
Solution: Two polynomials that rarely yield primes 35.4(2004)313
758.
Proposer: Gregory Dresden 34.4(2003)327
Topic: Differentiability and extreme values of a polar function
Solution: A critical parameter for a family of polar curves 35.4(2004)314
759.
Proposer: Götz Trenkler 34.4(2003)328
Topic: Necessary & sufficient condition that a matrix equation has a Solution
Solution: A matrix operation 35.4(2004)316
760.
Proposer: Arthur L. Holshouser 34.4(2003)328
Topic: Divisibility of and an inequality for a smallest value function
Solution: An inequality for an abstract function 35.4(2004)316
761.
Proposer: Charles L. Cooper & Michael Scott McClendon 34.5(2003)405
Topic: Circles and disks within disks
Solution: Disks in unions of discs 35.5(2004)403
762.
Proposer: Srinivasan Balaji & Hosam Mahmoud 34.5(2003)405
Topic: Characterizing a game matrix involving a tenable Pólya urn containing colored balls
Solution: Tenable Pólya urns 35.5(2004)404
763.
Proposer: Thomas J. Pfaff 34.5(2003)406
Topic: Find a function related to covering a circular cookie at depths in a vat of chocolate
Solution: Cookie rolling 35.5(2004)405
764.
Proposer: Kedar Hardikar 34.5(2003)406
Topic: Finding matrices of coordinates in n-dimensional vector spaces having determinant 0
Solution: Vandermonde variations 35.5(2004)406

765.
Proposer: Angelo S. DiDomenico 34.5(2003)406
Topic: Find primitive quadruples of 4 positive integers satisfying a given condition
Solution: Radii in disguise 35.5(2004)407
766.
Proposer: Josè Luis Díaz-Barrero 35.1(2004)55
Topic: Inequality for coefficients of a polynomial with nonnegative roots
Solution: Roots and coefficients 36.1(2005)74
767.
Proposer: Ovidiu Furdui 35.1(2004)55
Topic: Series sum of e^x- its Taylor partial sum
Solution: Remainder in Taylor's formula 36.1(2005)75
768.
Proposer: Michel Bataille 35.1(2004)55
Topic: Hyperbolic identity depending on an exponential identity
Solution: Hyperbolic and exponential functions 36.1(2005)76
769.
Proposer: Wenchang Chu & Leontina Veliana Di Claudio 35.1(2004)56
Topic: Binomial product identity
Solution: An expression for 2^n 36.1(2005)77
770.
Proposer: Josè Luis Díaz-Barrero 35.1(2004)56
Topic: Logarithmic summation inequality
Solution: A logarithmic inequality 36.1(2005)78
771.
Proposer: Yi-chuan Pan 35.2(2004)136
Topic: Infinitely many rational numbers guarantee 2 quadratics are squared rationals
Solution: An ancient and curious problem 36.2(2005)161
772.
Proposer: Yongge Tian 35.2(2004)136
Topic: Inequalities involving the ranks of 2 given idempotent matrices
Solution: Rank inequalities for idempotent matrices 36.2(2005)162
773.
Proposer: Ovidiu Furdui 35.2(2004)136; Corrected 35.4(2004)310
Topic: Properties of cosines that involve lengths of a triangle
Solution: Powers of cosines and triangles 36.2(2005)163; Corrected 36.4(2005)332
774.
Proposer: Jody M. Lockhart 35.2(2004)136
Topic: Necessary & sufficient condition that the y-coordinate of points on a circle is zero
Solution: Points generated by geometric constructions 36.2(2005)163

775.
Proposer: John H. Webb 35.2(2004)137
Topic: Inequalities involving a rational function of the sides of a triangle
Solution: An inequality in algebra and geometry 36.2(2005)164
776.
Proposer: Monte J. Zerger 35.3(2004)227
Topic: Find all idempotent pairs of matrices given 2 such matrices with idempotent products
Solution: Two-by-two idempotent pairs 36.3(2005)239
777.
Proposer: Michael Scott McClendon 35.3(2004)227
Topic: Is every interior point of every convex polygon m-trilinable?
Solution: Non-convex polygons and m-trilinable points 36.3(2005)240
778.
Proposer: Will Gosnell 35.3(2004)227
Topic: Condition on 2 parameters that guarantee a given triple primitive
Solution: A parametrization of the sides of right triangles 36.3(2005)241
779.
Proposer: Kedar Hardikar 35.3(2004)228
Topic: Evaluate an integral of an exponential vector function
Solution: An integral in linear algebra 36.3(2005)243
780.
Proposer: Josè Luis Díaz-Barrero 35.3(2004)228
Topic: Inequality involving a sum and an exponential function of Fibonacci numbers
Solution: An inequality involving Fibonacci numbers 36.3(2005)244
781.
Proposer: David Callan 35.4(2004)310
Topic: Probability involving wives, their girlfriends and husbands seated at a table
Solution: Sitting arrangements-wives and their girlfriends 36.4(2005)332
782.
Proposer: Talaat M. Abdin & Hosam M. Mahmoud 35.4(2004)310
Topic: Probability of a gambler in a losing position in a betting game
Solution: Losing a betting game 36.4(2005)333
783.
Proposer: Angelo S. DiDomenico 35.4(2004)311
Topic: Triangles with equal area triangles with and a necessary & sufficient condition for equal products of sides
Solution: Constructions and concurrency 36.4(2005)335
784.
Proposer: Kent Holing 35.4(2004)311
Topic: Lengths that cannot be sides of a right triangle and some that cannot form a square
Solution: Pythagorean triples, Pythagorean triangles, and squares 36.4(2005)337

785.
Proposer: Josè Luis Díaz-Barrero 35.4(2004)311
Topic: Inequality involving sides, cosines and the inradius of a triangle
Solution: A trigonometric inequality involving in-radius 36.4(2005)338
786.
Proposer: Michael Golomb 35.5(2004)402
Topic: Find conjugate diameters of an ellipse intersecting an arc of maximum length
Solution: Conjugate diameters of an ellipse 36.5(2005)414
.787.
Proposer: Michel Bataille 35.5(2004)402; Corrected 36.1(2005)73
Topic: Find the roots of a recursively defined polynomial equation
Solution: Roots of recursively defined polynomials 36.5(2005)415
788.
Proposer: Elias Lampakis 35.5(2004)402
Topic: Find bounds for the probability that a hyperbola has no integer points
Solution: The odds of having integer points on a hyperbola 36.5(2005)415
789.
Proposer: Zengxiang Tong & Zhen Huang 35.5(2004)403
Topic: Show convergence and find limits of 2 sequences related to nested roots of 2
Solution: Sequences converging to π 36.5(2005)416
790.
Proposer: Elliott Cohen 35.5(2004)403
Topic: Properties of the rank of a family of determinants of columns of a complex matrix
Solution: Ranks: matrices and linear forms 36.5(2005)418
791.
Proposer: Gregory Fredricks & Roger Nelson 36.1(2005)73
Topic Row and column sums of a (must be) square matrix 36.1(2005)73
Solution: Sufficient conditions for square matrices 37.1(2006)62
792.
Proposer: Josè Luis Díaz-Barrero 36.1(2005)73
Topic: Sum-Product inequality of a positive sequence 36.1(2005)73
Solution: A particular case of an inequality 37.1(2006)63
793.
Proposer: William P. Wardlaw 36.1(2005)74
Topic: Symmetric groups and inner automorphisms 36.1(2005)74
Solution: The making of an inner automorphism for A_n 37.1(2006)64
794.
Proposer: W. C. Gosnell 36.1(2005)74
Topic: Circle with an angle subtended by an arc of a certain length 36.1(2005)74
Solution: Existence of some special central angles 37.1(2006)65

795.
Proposer: Göt Trenkler 36.1(2005)74
Topic: Trace identities of a complex matrix 36.1(2005)73
Solution: Necessary & sufficient condition for $A^2 = -A$ 37.1(2006)67
796.
Proposer: Andrew Cusumano 36.2(2005)160; Corrected: 36.4(2005)330; 37.2(2006)144
Topic: Convergence of 2 series of reciprocals of products of Fibonacci numbers
Solution: Infinite sums defined by the Fibonacci sequence 37.4(2006)309
797.
Proposer: Josè Luis Díaz-Barrero 36.2(2005)161
Topic: Inequalities involving finite sums of squares of secant functions
Solution: Endpoint-approximation of a definite integral 37.2(2006)145
798.
Proposer: Willaim P. Wardlaw 36.2(2005)161
Topic: What characteristic polynomials completely determine the rank of a matrix?
Solution: Rank of A and det (xI - A) 37.2(2006)146
799.
Proposer: Mohammad K. Azarian 36.2(2005)161
Topic: Limit of a series involving terms of a 2^{nd} order recurrence relation
Solution: A limit expression of 1/(e - 1) 37.2(2006)147
800.
Proposer: Hojoo Lee 36.2(2005)161
Topic: Show a cubic polynomial satisfying given inequalities is positive for positive values
Solution: Conditions for non-negative cubic polynomials 37.2(2006)148
801.
Proposer: Nora Thornber 36.3(2005)238
Topic: First order matrix differential equation
Solution: Generalization of an old CMJ problem 37.3(2006)230
802.
Proposer: Willaim P. Wardlaw 36.3(2005)239
Topic: Probability that the product of 2 randomly chosen matrices is the identity matrix
Solution: The probability that AB = I 37.3(2006)232
803.
Proposer: Yongge Tian 36.3(2005)239
Topic: Show a matrix of given matrices is an orthogonal projector and construct another
Solution: An orthogonal projector consisting of non-negative matrices 37.3(2006)233
804.
Proposer: Mohammad Riazi-Kermani & Hongbiao Zeng 36.3(2005)239
Topic: Find a sufficient condition that an nth degree polynomial has a complex root
Solution: Polynomials: A sufficient condition for a non-real zero 37.3(2006)234

805.
Proposer: Josè Luis Díaz-Barrero 36.3(2005)239
Topic: Inequality involving Fibonacci numbers
Solution: An inequality involving the fourth power of Fibonacci numbers 37.3(2006)235
806.
Proposer: Kenneth Fogarty 36.4(2005)331
Topic: Lengths of sequences of derived triangles from a given triangle
Solution: A sequence of triangles 37.4(2006)311
807.
Proposer: Angelo S. DiDomenico 36.4(2005)331
Topic: Necessary & sufficient condition on 4 integers generating all Pythagorean triples
Solution: Conditions for primitive Pythagorean triples 37.4(2006)312
808.
Proposer: Yongge Tian 36.4(2005)331
Topic: Equality of ranks of matrices related to a given positive definite matrix
Solution: An equality for ranks of symmetric positive definite matrices 37.4(2006)313
809.
Proposer: Ovidui Furdui 36.4(2005)331
Topic: Limit of a sum involving roots of integers
Solution: A limit expression of $(\ln 2)^2$ 37.4(2006)314
810.
Proposer: Josè Luis Díaz-Barrero 36.4(2005)331
Topic: Limit of a sum of square roots of a ratio of polynomials in 2 variables
Solution: A limit computed by integration 37.4(2006)316
811.
Proposer: Willaim Wardlaw 36.5(2005)413
Topic: Find the characteristic polynomial of the adjoint of a matrix with a 5^{th} degree one
Solution: Characteristic polynomial of the adjoint of a matrix 37.5(2006)393
812.
Proposer: Ovidui Furdui 36.5(2005)413; Corrected: 37.2(2006)143
Topic: Find the limit of the difference of exponential functions of sums of sines
Solution: A limit related to Euler's constant 38.2(2007)150
813.
Proposer: Mohammad K. Azarian 36.5(2005)413
Topic: Establishing the sum of perpendicular lengths formed in 45 nested triangles
Solution: Forty-five nested equilateral triangles and csc 1° 37.5(2006)394
814.
Proposer: Josè Luis Díaz-Barrero 36.5(2005)414
Topic: Find the minimum value of a sum of ratios of 3 positive numbers
Solution: Minimizing a constrained symmetric expression 37.5(2006)396

815.
Proposer: Youngge Tian 36.5(2005)414
Topic: Necessary & sufficient condition for the ranges of Kronecker products of matrices
Solution: Comparing ranges of Kronecker products of matrices 37.5(2006)397
816.
Proposer: Ovidui Furdui 37.1(2006)59
Topic: Find the minimum number that allows 3 given sine terms to be the sides of a triangle
Solution: Building triangles for a triangle 38.1(2007)61
817.
Proposer: Mohammad K. Azarian 37.1(2006)59
Topic: Find values allowing a given slope to the graph of a function with given derivative
Solution: Slopes of tangents 38.1(2007)63
818.
Proposer: Angelo S. DiDomenico 37.1(2006)60
Topic: Identity for 5 consecutive elements in a recurrence relation
Solution: A Fibonacci-like sequence 38.1(2007)64
819.
Proposer: Michael Andreoli 37.1(2006)60
Topic: Evaluate the sum of recipocals of products of consecutive integers
Solution: An interesting and well known series 38.1(2007)65
820.
Proposer: Greg Oman 37.1(2006)60
Topic: Necessary condition that a commutative ring with identity has non associates
Solution: Non-associates 38.1(2007)66
821.
Proposer: Andrew Cusumano 37.2(2006)143
Topic: Limit of the difference of ratios of sums of powers of integers
Solution: An expression of e 38.2(2007)150
822.
Proposer: Götz Trenkler 37.2(2006)143
Topic: Show that a given matrix and its conjugate transpose have the same column space
Solution: Column space of a square matrix and its conjugate transpose 38.2(2007)152
823.
Proposer: Michel Bataille 37.2(2006)144
Topic: Inequality for the product of powers of tangents and sines
Solution: A trigonometric inequality 38.2(2007)153
824.
Proposer: Jeremy Leach 37.2(2006)144
Topic: Evaluate a double sum involving binomial coefficients and factorials
Solution: Always 2 38.2(2007)154

825.
Proposer: Juan-Bosco Romero Márquez 37.2(2006)144
Topic: Find the limit of the ratio of 2 improper integrals
Solution: Two improper integrals and L'Hospital's rule 38.2(2007)155
826.
Proposer: Parviz Khalili 37.3(2006)229
Topic: Evaluate an improper integral of a reciprocal of sums of 4^{th} powers
Solution: Evaluation of an improper integral 38.3(2007)228
827.
Proposer: Syrous Marivani 37.3(2006)229
Topic: Evaluate sums of Fibonacci numbers and sums of Lucas numbers
Solution: Sums related to Fibonacci and Lucas sequences 38.3(2007)230
828.
Proposer: Michael McClendon 37.3(2006)230
Topic: Find parametric equations of a curve with given intercepts to tangent lines
Solution: The cycloid 38.3(2007)231
829.
Proposer: Dimitri Thoro & Linda Valdes 37.3(2006)230
Topic: Finding distances between 2 parallelopipeds cut by a plane
Solution: Cutting a rectangular parallelopiped 38.3(2007)232
830.
Proposer: Roger Bilisoly 37.3(2006)230; Corrected: 37.4(2006)308; 37.5(2006)392
Topic: Finding the area of an alternating n-gon with sides satisfying given conditions
Solution: Area of an alternating 2n-gon 38.5(2007)389
831.
Proposer: Stanley Rabinowitz 37.4(2006)308
Topic: Identities involving tangents and sines of specific angles
Solution: The tangent function and $\sqrt{11}$ 38.4(2007)310
832.
Proposer: Ken Holing 37.4(2006)309
Topic: Necessary & sufficient condition that the Galois group of a quartic polynomial equation is cyclic
Solution: Conditions for a cyclic Galois group of a quadratic equation 38.4(2007)312
833.
Proposer: Angelo S. DiDomenico 37.4(2006)309
Topic: Finding Heronian triangles with conditions on their sides and perimeter
Solution: Generating Heronian triangles 38.4(2007)315
834.
Proposer: Josè Luis Díaz-Barrero 37.4(2006)309
Topic: Inequality involving cube roots of ratios of Fibonacci numbers
Solution: An inequality with Fibonacci numbers and cube roots 38.4(2007)316

835.
Proposer: Juan-Bosco Romero Márquez 37.4(2006)309
Topic: Inequalities involving cubes of sums of 3 positive numbers
Solution: An inequality involving cubes 38.4(2007)317
836.
Proposer: Josè Luis Díaz-Barrero 37.5(2006)392
Topic: Inequality involving sums and powers of 3 real numbers
Solution: An inequality with cyclosymmetric functions 38.5(2007)390
837.
Proposer: Juan-Bosco Romero Márquez 37.5(2006)392
Topic: Inequalities involving the sides and inradius of a triangle
Solution: Inequalities from the inscribed circle of a triangle 38.5(2007)391
838.
Proposer: Arkady Alt 37.5(2006)393
Topic: Inequality for reciprocals of sums and differences of squared sides of a triangle
Solution: An acute triangle inequality 38.5(2007)392
839.
Proposer: Andrew Cusumano 37.5(2006)393
Topic: Find the general term and limit of a sequence of sums of reciprocals of integers
Solution: The general term and limit of a sequence 38.5(2007)393
840.
Proposer: Ruthven Murgatroyd 37.5(2006)393
Topic: Moving circular segments around a right angled hallway
Solution: Area of a circle segment and length of its chord 38.5(2007)395
841.
Proposer: Mohammad K. Azarian 38.1(2007)60
Topic: Find value of 2 fixed points of a quadratic polynomial
Solution: Fixed points of a quadratic polynomial 39.1(2008)66
842.
Proposer: Hongbiao Zeng 38.1(2007)60
Topic: Show existence of a point on the surface of a cube satisfying a distance condition
Solution: An inequality of a k-dimensional unit cube 39.1(2008)67
843.
Proposer: P. R. Parthasarathy 38.1(2007)60
Topic: Equality of n summations of powers of a number in (0,1) to a given determinant
Solution: An expression of a determinant 39.1(2008)68
844.
Proposer: Ovidui Furdui 38.1(2007)61
Topic: Identity for the sum of a sequence involving Euler's constant
Solution: Infinite series and Euler's constant 39.1(2008)71

845.
Proposer: Mohsen Soltanifar 38.1(2007)61
Topic: Continuity of a given Riemann-integrable function which is an integral's derivative
Solution: Derivatives of integrals 39.1(2008)6672
846.
Proposer: Josè Luis Díaz-Barrero
Topic: Inequality involving sums of reciprocals of powers of binomial coefficients
Solution: An inequality with the sum of combinations 39.2(2008)154
847.
Proposer: Juan-Bosco Romero Márquez
Topic: Inequalities for the inradius, circumradius and semi-perimeter of a triangle
Solution: Inequalities with inradius and circumradius 39.2(2008)155
848.
Proposer: Angelo S. DiDomenico 38.2(2007)149
Topic: Identities for generalized Fibonacci-like sequences
Solution: An identity for Fibonacci-like sequences 39.2(2008)157
849.
Proposer: Gregory L. Wilson 38.2(2007)149
Topic: Probability concerning life spans of contemporaries
Solution: Probability for two contemporaries 39.2(2008)158
850.
Proposer: Charles Redmond 38.2(2007)149
Topic: Properties of eigenvectors for a given matrix
Solution: Positive eigenvalues 39.2(2008)159
851.
Proposer: Josè Luis Díaz-Barrero 38.3(2007)227
Topic: Finding eigenvalues of the sum of 2 projection matrices
Solution: A conditional inequality 39.3(2008)241
852.
Proposer: Frank Morgan 38.3(2007)227; Clarification: 39.1(2008)65
Topic: Finding eigenvalues of two orthogonal projection matrices 38.3(2007)227
Solution Eigenvalues of the sum of two orthogonal projection matrices 40.1(2009)56
853.
Proposer: Angelo S. DiDomenico 38.3(2007)227
Topic: Padoa's inequality and locating a point on a triangle whose sides satisfy it
Solution: A generalization of Padoa's inequality 39.3(2008)242
854.
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Proposer: Elias Lampakis 44.1(2013)66
Topic: Establish an inequality involving the cosines of three angles
Solution: An inequality with cosines 45.1(2014)62

995
Proposer: George Apostolopoulos 44.1(2013)66
Topic: Inequality involving the square root of a sum of products of three fractions
Solution: A constrained inequality 45.1(2014)63
996
Proposer: Perfetti Paolo 44.2(2013)142
Topic: Evaluating a trigonometric integral
Solution: evaluation of an improper integral 45.2(2014)146
997
Proposer: Ovidiu Furdui 44.2(2013)142
Topic: An infinite sum of squares of alternating harmonic series
Solution: An expression of ln 2 45.2(2014)147
998
Proposer: Elias Lampakis 44.2(2013)142
Topic: Establishing a trigonometric inequality
Solution: An inequality with even powers of sine and cosine 45.2(2014)148
999
Proposer: Cezar Lupu & Ştefan Spătaru 44.2(2013)143
Topic: Inequality involving powers, roots products and sums of two finite sequences
Solution: An application of Poppvocou's theorem 45.2(2014)149
1000
Proposer: Michel Bataille 44.2(2013)143
Topic: Prove that certain set with an associative binary operation is a group
Solution: A sufficient condition for a group 45.2(2014)150
1001
Proposer: Michel Bataille 44.3(2013)233
Topic: Limit of integrals involving a function of sines and cosines
Solution: The limit of the sum of two integrals 45.3(2014)223
1002
Proposer: Mowaffaq Hajja 44.3(2013)233; Corrected 44.5(2013)437; 45.3(2014)224
Topic: Proving the equality of areas of triangles inside a convex quadrilateral
Solution: Area and diagonal bisector of a convex quadrilateral 45.5(2014)394
1003
Proposer: D. M. Bătinetu-Giurgiu and Neculai Stanciu 44.3(2013)233
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Proposer: Ángel Plaza and Sergio Falcón 44.3(2013)234
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1005
Proposer: Elias Lampakis 44.3(2013)234
Topic: Summation inequality involving a triangle's inradius, circumradius and excirle radius
Solution: An inequality with the radii of the excircles 45.3(2014)228
1006
Proposer: Greg Oman 44.4(2013)325
Topic: Finding finite commutative rings with only trivial units
Solution: Identifying some finite commutative rings with identity 45.4(2014)319
1007
Proposer: George Apostolopoulos 44.4(2013)325
Topic: Inequality involving three variables and three constants whose product is one
Solution: An inequality with two constraints 45.4(2014)319
1008
Proposer: Cezar Lupo 44.4(2013)325
Topic: Integral inequality involving a differentiable function with a continuous derivative
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1009
Proposer: Valery Karachik 44.4(2013)326
Topic: Finding the limit of a sum of ratios involving a sequence with a know limit
Solution: Evaluating the limit of a sum 45.4(2014)321
1010
Proposer: George Apostolopoulos 44.4(2013)326
Topic: Inequality involving *n*th power of a function of three positive numbers
Solution: A collaboration of various inequalities 45.4(2014)322
1011
Proposer: Greg Oman 44.5(2013)437
Topic: Determine if an injective mapping on a group is a homomorphism
Solution: Injective maps and group homomorphisms 45.5(2014)395
1012
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Topic: Inequalities involving circumradii and incenters of three triangles
Solution: Inequalities related to circumradius and incenter 45.5(2014)396
1013
Proposer: D. M. Bătinetu-Giurgiu 44.5(2013)437
Topic: Inequalities involving tangents and the inradius and circumradius of a triangle
Solution: Triangle inequalities and the tangent function 45.5(2014)397
1014
Proposer: Luz M. DeAlba 44.5(2013)438
Topic: The inverse points of two circles are not the limit points of their coaxial family
Solution: Coaxal family determined by two circles 45.5(2014)398

1015
Proposer: Michael Goldberg & Mark Kaplan 44.5(2013)438
Topic: Symmetry of median extensions of a triangle with respect to an angle bisector
Solution: Bilateral symmetry 45.5(2014)399

1016
Proposer: Wei-Kai Lai 45.1(2014)57
Topic: Finding the limit of a sum of inner products of vectors in a triangle
Solution: A limit built on a triangle 46.1(2015)62

1017
Proposer: Götz Trenkler & Dietrich Trenkler 45.1(2014)57
Topic: Finding an algebraic expression for a sum of skew symmetric matrices
Solution: Simplifying a matrix expression 46.1(2015)63

1018
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 45.1(2014)58;
corrected 45.3(2014)222, 46.1(2015)64
Topic: Inequality involving the inradius of a triangle and one involving the inradius of the sphere of a tetrahedron
Solution: Heights in a triangle 46.3(2015)226

1019
Proposer: George Apostolopoulous 45.1(2014)58
Topic: Proving the orthogonality of circles relating to the diagonals of a parallelogram
Solution: Conditions for orthogonal circles in a parallelogram 46.1(2015)64

1020
Proposer: Elias Lampakis 45.1(2014)58
Topic: Inequality involving the circumradius and inradius of a triangle
Solution: An inequality with semiperimeter, inradius, and circumradius 46.1(2015)65

1021
Proposer: George Apostolopoulos 45.2(2014)145
Topic: Inequality involving the cosines of angles in an acute triangle
Solution: An inequality with cosines aon an acute angle 46.2(2015)143

1022
Proposer: Elias Lampakis 45.2(2014)145
Topic: Inequality involving sides and the cosines of angles in an acute triangle
Solution: Another inequality with cosines on an acute triangle 46.2(2015)144

1023
Proposer: George Apostolopoulos 45.2(2014)145
Topic: Identity involving the sides and tangent of one of the angles in a specific triangle
Solution: An identity on a 45-60-75 triangle 46.2(2015)145

1024
Proposer: Ovidiu Furdui 45.2(2014)146
Topic: Powers of integrals equaling integrals of powers of a continuous function
Solution: Conditions for a constant function 46.2(2015)146

1025
Proposer: Yanus Tunçbilek 45.2(2014)146
Topic: Inequality involving positive numbers and their logarithms
Solution: A straight-forward inequality 46.2(2015)146
1026
Proposer: Elias Lampakis 45.3(2014)222
Topic: Inequality involving three positive real numbers
Solution: Another algebraic inequality 46.3(2015)221
1027
Proposer: George Apostolopoulos 45.3(2014)223
Topic: Inequality involving three non-zero real numbers
Solution: Another constrained inequality 46.3(2015)222
1028
Proposer: George Apostolopoulos 45.3(2014)223
Topic: Find the ratio of areas inside a convex quadrilateral
Solution: Areas in a convex quadrilateral 46.3(2015)223
1029
Proposer: José Luis Díaz-Barrero & Ángel Plaza 45.3(2014)223
Topic: Inequality involving Fibonacci and Lucas numbers
Solution: Connecting three sequences 46.3(2015)224
1030
Proposer: Elias Lampakis 45.3(2014)223
Topic: Solving six equations in six non-zero variables
Solution: An interesting system of equations 46.3(2015)225
1031
Proposer: George Apostolopoulos 45.4(2014)318
Topic: Inequality for areas of internal triangle in a triangle and a sum of squares of sides
Solution: An inequality for areas 46.4(2015)301
1032
Proposer: George Apostolopoulos 45.4(2014)318
Topic: Inequality involving sines and cosines of angles in an acute triangle
Solution: A trigonometric inequality 46.4(2015)303
1033
Proposer: Michel Bataille 45.4(2014)318
Topic: Sum of reciprocals of a product of sines of non-multiplies of π
Solution: A finite trigonometric sum 46.4(2015)304
1034
Proposer: Don Redmond 45.4(2014)319
Topic: Evaluating an integral of even powers of a differentiable function
Solution: Integral of an involution 46.4(2015)305

1035
Proposer: Michel Bataille 45.4(2014)319
Topic: Inequality involving the sides, incenter and an interior point of a triangle
Solution: An inequality for triangles 46.4(2015)306
1036
Proposer: George Apostolopoulos 45.5(2014)393
Topic: Inequality involving three positive real numbers whose product is 1
Solution: An algebraic inequality 46.5(2015)370
1037
Proposer: George Apostolopoulos 45.5(2014)393
Topic: Inequality involving a point inside a triangle and its projections to the sides
Solution: A trigonometric inequality 46.5(2015)371
1038
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 45.5(2014)393
Topic: Inequality for the area and sides of a triangle and three non-negative real numbers
Solution: An inequality for triangles 46.5(2015)372
1039
Proposer: José Luis Díaz-Barrero 45.5(2014)394
Topic: Inequality involving a finite sequence of positive real numbers whose product is 1
Solution: An inequality in n variables 46.5(2015)373
1040
Proposer: Michael Goldenberg & Mark Kaplan 45.5(2014)394
Topic: Brocade points and intersections of lines and the circumcircle of a triangle
Solution: Brocard points 46.5(2015)374
1041
Proposer: George Apostolopoulos 46.1(2015)61
Topic: Inequality involving three variables and fifth powers
Solution: An algebraic inequality 47.1(2016)62
1042
Proposer: Ovidiu Furdui 46.1(2015)61
Topic: limit of the nth root of an integral
Solution: The limit of an integral 47.1(2016)63
1043
Proposer: Peter Nüesch 46.1(2015)61
Topic: Inequality involving the sides, semiperimeter and circumradius of a triangle
Solution: An inequality for triangles 47.1(2016)64
1044
Proposer: Spiros P. Andriopoulos 46.1(2015)62
Topic: Inequality involving the angles (in radians) and sines of the angles of a triangle
Solution: An inequality for the angles of a triangle 47.1(2016)65

1045
Proposer: George Apostolopoulos 46.1(2015)62
Topic: Inequality involving the medians and inradius of a triangle
Solution: An inequality for the medians of a triangle 47.1(2016)65
1046
Proposer: Spiros P. Andriopoulos 46.2(2015)142
Topic: Inequalities involving sines and exponentials
Solution: Sines and exponentials 47.2(2016)139
1047
Proposer: Spiros P. Andriopoulos 46.2(2015)142
Topic: Inequality involving products of ratios of sines
Solution: An n-fold product of quotients of sines 47.2(2016)141
1048
Proposer: Michel Bataille 46.2(2015)143
Topic: Find the minimal value of the difference between the sum and product of a sequence of real numbers
Solution: A sum minus a product 47.2(2016)141
1049
Proposer: Michel Bataille 46.2(2015)143
Topic: Equivalence of two equations for an orthogonal and a skew symmetric matrix
Solution: Commuting matrices 47.2(2016)142
1050
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 46.2(2015)143
Topic: Inequality of a product of sums involving the sides of a convex n-gon
Solution: Convex n-gons 47.2(2016)143
1051
Proposer: Michel Bataille 46.3(2015)220
Topic: Finding bounds for a ratio involving reciprocals of a sequence of positve numbers
Solution: GLB and LUB 47.3(2016)222
1052
Proposer: Michel Bataille 46.3(2015)220
Topic: Proving a relationship involving a point on a perpendicular bisector in a triangle
Solution: Projections of the symmetric in a scalene triangle 47.3(2016)223
1053
Proposer: Ovidiu Furdui 46.3(2015)220
Topic: Proving a property involving a matrix and its transpose
Solution: A determinant 47.3(2016)224
1054
Proposer: Greg Oman 46.3(2015)221
Topic: Determining if two rings of sequences are isomorphic
Solution: Sequences which are ultimately constant 47.3(2016)225

1055
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 46.3(2015)221
Topic: Relationships of the radii of three inscribed circles of three triangles in a triangle
Solution: Radii of inscribed circles 47.3(2016)226

1056
Proposer: Stan Byrd & Roger Nichols 46.4(2015)300
Topic: Find the coefficients which minimize a definite integral of a cubic polnomial
Solution: Optimizing a cubic polynomial and its integral 47.4(2016)301

1057
Proposer: Spiro Andriopoulos 46.4(2015)300
Topic: Inequality involving sums of two converging sequences of integers and their limits
Solution: Estimating an infinite sum 47.4(2016)302

1058
Proposer: George Apostolopoulos 46.4(2015)300
Topic: A string of inequalities involving the cosines and sine of the angles of triangle
Solution: A product of sums of sines and cosines 47.4(2016)303

1059
Proposer: Minh Can 46.4(2015)301
Topic: Inequality involving the sines of the angles of a triangle
Solution: An inequality involving sines 47.4(2016)304

1060
Proposer: George Apostolopoulos 46.4(2015)301
Topic: Inequality involving cosines, circumradius, inradius and semiperimeter of a triangle
Solution: A sum with cotangents 47.4(2016)305

1061
Proposer: Arkady Alt 46.5(2015)369
Topic: Inequality involving two positive real numbers
Solution: An inequality between Hölder and Lehner means 47.5(2016)370

1062
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 46.5(2015)369; 47.2(2016)138
Topic: Inequalities involving the sides and semiperimeter of a nonisosceles triangle
Corrected 47.5(2016)372
Solution: *****

1063
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 46.5(2015)369
Topic: Inequality involving the sides and inradius of a nonisosceles triangle
Solution: An inequality for nonisosceles triangles 47.5(2016)372

1064
Proposer: Mircea Merca 46.5(2015)370; 47.2(2016)138
Topic: Inequality for a sum of cosines of a rational expression involving positive integers
Corrected 47.5(2016)373
Solution: *****

1065
Proposer: José Luis Díaz-Barrero José Luis Díaz-Barrero 46.5(2015)370
Topic: Inequalities involving the real parts of sums of sets of complex numbers
Solution: Two inequalities for complex numbers
Corrected 47.5(2016)373

1066
Proposer: George Apostolopoulos 47.1(2016)61
Topic: Identity involving tangents of angles, and the in-and-circum radii of a triangle
Solution: *****

1067
Proposer: Greg Oman 47.1(2016)61
Topic: find all commutative Artinian rings with the only units 1 an -1
Solution: *****

1068
Proposer: Spiros P.Andriopoulos 47.1(2016)61
Topic: Inequality involving a product of integrals of ratios of continuous positive functions
Solution: *****

1069
Proposer: Ángel Plaza 47.1(2016)61
Topic: Finding the limit of a recursive sequence in terms of its initial conditions
Solution: *****

1070
Proposer: Stephen Kaczkowski 47.1(2016)62
Topic: Find a closed form of the limit of a sequence involving the sum of powers of a ratio
Solution: *****

1071
Proposer: Xiang Qian Chang 47.2(2016)138
Topic: Inequality involving a determinant and its trace
Solution: *****

1072
Proposer: Spiros P.Andriopoulos 47.2(2016)139
Topic: Inequality for the sum of a ratio involving powers of three positive numbers
Solution: *****

1073
Proposer: George Apostolopoulos 47.2(2016)139
Topic: Formula for the tangent of the acute angle of the diagonals of a quadrilateral
Solution: *****

1074
Proposer: Panagiote Ligouras 47.2(2016)139
Topic: Two inequalities for expression involving six positive real numbers
Solution: *****

1075
Proposer: Elias Lampakis 47.2(2016)139
Topic: Inequality for sums of expressions involving the sides of a triangle
Solution: *****
1076
Proposer: D. M. Bătinetu-Giurgiu & Neculai Stanicu 47.3(2016)221
Topic: Inequality involving the sides and circumradius of a triangle
Solution: *****
1077
Proposer: Spiros P.Andriopoulos 47.3(2016)221
Topic: Inequality for the sum of sequence of a ratio of logarithms
Solution: *****
1078
Proposer: Greg Oman 47.3(2016)221
Topic: Does there exist a well ordered uncountable set a function satisfying an inequality?
Solution: *****
1079
Proposer: Valeriy Karachic & Leonid Menikhes 47.3(2016)222
Topic: Find and prove the limit for the fractional part of a sum of square roots
Solution: *****
1080
Proposer: George Apostolopoulos 47.3(2016)222
Topic: Five inequalities of expressions involving three positive numbers whose sum is three
Solution: *****
1081
Proposer: Michel Bataille 47.4(2016)300
Topic: Finding three numbers that relate to the definite integral of a ratio of polynomials
Solution: *****
1082
Proposer: Michael Goldenberg & Mark Kaplan 47.4(2016)300
Topic: Three conjectures involving a hyperbola related to a certain triangle
Solution: *****
1083
Proposer: Alina Sîntămărian 47.4(2016)301
Topic: Find the sum of a ratio of polynomials of integers
Solution: *****
1084
Proposer: George Apostolopoulos 47.4(2016)301
Topic: Finding the maximum area of a certain triangle
Solution: *****

1085
Proposer: Eugen J. Ionascu 47.4(2016)301
Topic: Two conjectures involving quadruples of numbers relating to area in a quadrilateral
Solution: *****
1086
Proposer: Michel Bataille 47.5(2016)369
Topic: Constructing a triangle with conditions on its legs with a set square
Solution: *****
1087
Proposer: Ian Cavey 47.5(2016)369
Topic: Two properties concerning the Center(n) in a regular n-gon
Solution: *****
1088
Proposer: Eugen J. Ionascu 47.5(2016)369
Topic: Inequality for the absolute value of the integral of a differentiable function
Solution: *****
1089
Proposer: Ángel Plaza 47.5(2016)370
Topic: Proving a string of inequalities in three variables
Solution: *****
1090
Proposer: Ovidiu Furdui 47.5(2016)370
Topic: Solving a functional equation in two variables
Solution: *****