THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

ANNOUNCEMENT OF WINNERS
of the seventy-seventh competition held on December 3, 2016

WINNING TEAMS

Rank	School	Team Members (in alphabetical order)
1	CARNEGIE MELLON UNIVERSITY	Joshua D. Brakensiek, Thomas E. Swayze, and Samuel Zbarsky
2	PRINCETON UNIVERSITY	Eric D. Schneider, Zhuo Qun Song, and Xiaoyu Xu
3	HARVARD UNIVERSITY	Pakawut Jiradilok, Dong Ryul Kim, and David W. Stoner
4	MASSACHUSETT'S INSTITUTE OF TECHNOLOGY	Robert C. Shen, David H. Yang, and Yunkun Zhou
5	STANFORD UNIVERSITY	Jie Jun Ang, Huy T. Pham, and Albert R. Zhang

The first place team receives an award of $25,000 and each member of the team receives $1,000. The awards for second place are $20,000 and $800; for third place, $15,000 and $600; for fourth place $10,000 and $400; and for fifth place $5,000 and $200.

In each of the following categories, the listing is in alphabetical order.

THE PUTNAM FELLOWS — THE FIVE HIGHEST RANKING INDIVIDUALS

Each receives an award of $2,500.

JOSHUA D. BRAKENSIEK	Carnegie Mellon University
DONG RYUL KIM	Harvard University
THOMAS E. SWAYZE	Carnegie Mellon University
SAMUEL ZBARSKY	Carnegie Mellon University
YUNKUN ZHOU	Massachusetts Institute of Technology

THE NEXT NINE HIGHEST RANKING INDIVIDUALS

Each receives an award of $1,000.

CALVIN DENG	Harvard University
JIYANG GAO	Massachusetts Institute of Technology
XIAOYU HUANG	University of California, Los Angeles
ALLEN X. LIU	Massachusetts Institute of Technology
SAMMY Y. LUO	Massachusetts Institute of Technology
ERIC D. SCHNEIDER	Princeton University
ZHUO QUN SONG	Princeton University
DANIEL SPIVAK	University of Waterloo
MURILO C. ZANARELLA	Princeton University

THE NEXT ELEVEN HIGHEST RANKING INDIVIDUALS

Each receives an award of $250.

EVAN CHEN	Massachusetts Institute of Technology
ANDREW HE	Massachusetts Institute of Technology
HYUN SUB HWANG	Massachusetts Institute of Technology
RAVI JAGADEESAN	Harvard University
ESHAAN NICHANI	Massachusetts Institute of Technology
MARK A. SELLKE	Massachusetts Institute of Technology
ROBERT C. SHEN	Massachusetts Institute of Technology
STEFAN SPATARU	Harvard University
DAVID W. STONER	Harvard University
SCOTT WU	Harvard University
LINGFU ZHANG	Massachusetts Institute of Technology

HONORABLE MENTION — TEAMS

CALIFORNIA INSTITUTE OF TECHNOLOGY
HARVEY MUDD COLLEGE
UNIVERSITY OF CALIFORNIA, LOS ANGELES
UNIVERSITY OF WASHINGTON
UNIVERSITY OF WATERLOO

Zachary Chase, Matthew Jin, and Matthew A. Weidner
Adam R. Busis, Jordan Haack, and Abram Sanderson
Emre Girgin, Xiaoyu Huang, and Konstantin Miagkov
William L. Dana, Jasper P. Hugunin, and Austin Stromme
Antonio M. Lovett, Daniel Spivak, and Anzo Z. Teh

HONORABLE MENTION — INDIVIDUALS

JUSTIN K. LIM, Massachusetts Institute of Technology
TING-CHUN LIN, Massachusetts Institute of Technology
YANG LIU, Massachusetts Institute of Technology
ERIK A. METZ, University of Maryland, College Park
KONSTANTIN MIAGKOV, University of California, Los Angeles
SHYAM S. NARAYANAN, Harvard University
WEERACHAI NEERANARTVONG, Massachusetts Institute of Technology
ERIC NEYMAN, Princeton University
MINH PHUONG NGUYEN, Stony Brook University
SUNG GI PARK, Massachusetts Institute of Technology
NIHAL PEDNEKAR, University of Waterloo
HUY T. PHAM, Stanford University
ZACHARY H. POLANSKY, University of Rochester
TAHSIN SAFFAT, Massachusetts Institute of Technology
MEHTAAB S. SAWHNEY, University of Pennsylvania
JASON A. SCHUCHARDT, Yale University
SEAN SHI, Massachusetts Institute of Technology
MEL Y. SHU, Princeton University
KEVIN SUN, Massachusetts Institute of Technology
ANZO Z. TEH, University of Waterloo
SUCHAN VIVATSETHACHAI, Massachusetts Institute of Technology
HUA WANG, University of California, Berkeley
MATTHEW A. WEIDNER, California Institute of Technology
JIANQIAO XIA, Massachusetts Institute of Technology
VICTOR Z. XU, Princeton University
XIAOYU XU, Princeton University
YUNBEI XU, University of California, Los Angeles
JEFFREY YAN, Harvard University
DAVID H. YANG, Massachusetts Institute of Technology
ALBERT R. ZHANG, Stanford University
ZIYANG ZHANG, Harvey Mudd College
ROY H. ZHAO, Princeton University
KEVIN ZHOU, Massachusetts Institute of Technology

SINA ABBASE, University of Waterloo
KUSHAL A. AGARWAL, California Institute of Technology
DAVID J. ALTIZIO, Carnegie Mellon University
RYAN N. ALWEISS, Massachusetts Institute of Technology
JIE JUN ANG, Stanford University
RODRIGO S. ANGELO, Princeton University
ANDRE A. ARSLAN, Princeton University
ITAI BAR-NATAN, University of Toronto
AARON J. BERGER, Yale University
BRIAN D. BURKS, University of California, Berkeley
ADAM R. BUSIS, Harvey Mudd College
LEWIS CHEN, University of California, Berkeley
WILLIAM B. CHRISTERSON, Carnegie Mellon University
WILLIAM L. DANA, University of Washington
QUANG VU DAO, Columbia University
SIMONA DIACONU, Princeton University
YIBO GAO, Massachusetts Institute of Technology
KYLE A. GETTIG, University of Florida
ALBERT GEVORGYAN, University of Waterloo
BRIAN H. GU, Massachusetts Institute of Technology
MEGHAL GUPTA, Massachusetts Institute of Technology
BRICE HUANG, Massachusetts Institute of Technology
JASPER P. HUGUNIN, University of Washington
JACOB J. IMOLA, Carnegie Mellon University
MATTHEW JIN, California Institute of Technology
PAKAWUT JIRADILOK, Harvard University
KRITKORN KARNTIKOON, Massachusetts Institute of Technology
MYEONHU KIM, Columbia University
JACOB J. KLEGAR, Harvard University
SAMUEL KORSKY, Massachusetts Institute of Technology
MICHAEL J. KURAL, Massachusetts Institute of Technology
CALVIN J. LEE, Massachusetts Institute of Technology
HEEJONG LEE, University of California, Irvine
RAY LI, Carnegie Mellon University
QIAN LIE, University of Chicago

ELIZABETH LOWELL PUTNAM PRIZE

The winner receives an award of $1,000.

SIMONA DIACONU   Princeton University

QUESTIONS COMMITTEE

Henry Cohn (chair), Microsoft and Massachusetts Institute of Technology; Byron Walden, Santa Clara University; Harm Derksen, University of Michigan, Ann Arbor.

A total of 4164 students from 568 colleges and universities in Canada and the United States participated in the Competition. There were teams from 415 institutions. More complete details will appear in the American Mathematical Monthly.

March 17, 2017   Leonard F. Klosinski (Santa Clara University), Director; Gerald L. Alexanderson (Santa Clara University) and Mark Krusemeyer (Carleton College), Associate Directors

THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

March 17, 2017

Dear Colleague:

Enclosed is a report on your contestants in the 77th Competition and your team rank (if it was in the range 1—150), a list of the top 500 contestants (which you may wish to share with your committee on graduate students), an announcement of winners, and a list of participating schools. Some tables are given below. Your contributions to the Competition are greatly appreciated.

Leonard F. Klosinski, Director
Gerald L. Alexanderson, Associate Director
Mark Krusemeyer, Associate Director

Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
114	1	78	24.5	58	79	41.8	182.5	27	530.5	10	1313.5
103	2	77	26	57	88.5	41.7	185	26	552.5	9	1499.5
102	3	76	28	56	99	41.6	186.5	25	566	8	1602
100	4	75	30	55	106.5	41	198.5	24	575	7	1634.5
97	5	72	32	54	109.5	40	221.5	23	585.5	6	1637.5
96	6	71	35	53	111	39	248	22	608	5	1644.5
95	7	70	37.5	52	113	38	269.5	21	658.5	4	1670.5
93	8	69	39	51	118	37	284.5	20	733	3	1720
92	9	68	42	50	126	36	298	19	813	2	1866
90	11	67	45.5	49	135.5	35	305.5	18	881	1	2123.5
87	13	66	47.5	48	147.5	34	310	17	926.5	0	3214
86	14	65	52	47	161	33	318	16	947.5		
85	16	64	57.5	46	170.5	32	337	15	958.5		
84	18	63	60.5	45	174.5	31	365.5	14	975.5		
83	19	61	65	44	176	30	408.5	13	1006		
82	21	60	69.5	42	177	29	460.5	12	1064		
79	23	59	72.5	41.9	179	28	501	11	1150		

FREQUENCY DISTRIBUTION OF PROBLEM SCORES OF THE TOP 187 CONTESTANTS

	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	total
10	123	49	15	45	28	2	110	94	28	62	21	20	597
9	55	66	6	16	4	0	18	18	124	32	12	11	362
8	1	49	47	4	1	0	22	39	13	16	5	7	204
7	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
2	3	13	12	12	10	1	17	23	3	3	6	4	107
1	0	7	37	5	8	1	8	8	1	9	5	2	91
0	5	3	45	31	27	69	10	5	6	27	62	35	325
blank	0	0	25	74	109	114	2	0	12	38	76	108	558