Problem of the month
September 2010

We are pleased to inform that Michael Watkins wrote the best* solution for the March 2010 Problem of the Month. He has won the right to brag, and be correct in any mathematical discussion** that is held in September 2010. Congratulations Michael!

We thank to all those who wrote solutions to May's problem. We encourage you to keep submitting your solutions.

You will have until **September** 30^{th} to solve the problem below. Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

Bragging rights winners, solutions, past (and future) problems of the month, etc can be found on

$$http://csufresno.edu/math/news\_and\_events/pom.shtml$$

Problem for September 2010.

Five quarters and five pennies are on the floor, they do not overlap and no three of the 10 coins are on a line. Is it always possible to draw five segments, each one of them starting at a different quarter and ending at different penny so that the segments do NOT intersect?

* A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

** Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.

Problem of the month
October 2010

We are saddened to inform that there were no winners for the September 2010 Problem of the Month. We anticipate to see a better response to this month's problem.

You will have until **October** 31^{st} to solve the problem below. Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

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Problem for October 2010.

When Mr. Smith cashed a check at his bank, the teller mistook the number of cents for the number of dollars and vice versa. Unaware of this, Mr. Smith spent 68 cents and then noticed to his surprise that he had twice the amount of the original check. Determine the smallest value for which the check could have been written.

* A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

** Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.

Problem of the month
November 2010

We are pleased to inform that Richard Parks wrote the best* solution for the October 2010 Problem of the Month. He has won the right to brag, and be correct in any mathematical discussion** that is held in November 2010. Congratulations Richard!

We thank to all those who wrote solutions to October's problem. We encourage you to keep submitting your solutions.

You will have until **November** 30^{th} to solve the problem below. Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

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Problem for November 2010.

A bunny is at the bottom left square of an $n \times n$ chess board. A carrot is at the top right corner of the same board. Assume the bunny hops only one square at a time and either up or right, how many many different paths could the bunny take to get to the carrot?

Extra credit: What if the bunny can never go 'below' the main diagonal of the board (the one joining the bottom left corner and the top right corner of the board)?

* A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

** Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.

Problem of the month
December 2010

We are pleased to inform that Claudia Laguna wrote the best* solution for the November 2010 Problem of the Month. We anticipate to see a better response to this month's problem.

You will have until **December** 17^{th} to solve the problem below. Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

Bragging rights winners, solutions, past (and future) problems of the month, etc can be found on

http://csufresno.edu/math/news_and_events/pom.shtml

Problem for December 2010.

Show that there is a natural number n such that $n!$ when written in decimal notation (that is, base 10) ends exactly in 2010 zeros.

∗ A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

∗∗ Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.

Problem of the month
February 2011

We are pleased to inform that Anthony Lepore wrote the best* solution for the December 2010 Problem of the Month. He has won the right to brag, and be correct in any mathematical discussion** that is held in February 2011. Congratulations Anthony!

We thank to all those who wrote solutions to December's problem. We encourage you to keep submitting your solutions.

You will have until **February** 28^{th} to solve the problem below. Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

Bragging rights winners, solutions, past (and future) problems of the month, etc can be found on

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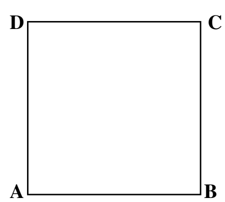
Problem for February 2011.

Take a square piece labeled as the figure below and let P_1 to be a point on the perpendicular



bisector of $\overline{AB}$ (and on the square) that is fairly close to $\overline{AB}$. Then choose P_2 to be anywhere on, let us say, $\overline{BC}$. Now fold the square creating a crease that passes through P_2 and so that P_1 falls on $\overline{AB}$.
Next, unfold the paper and choose a different P_2 (this point could be on $\overline{DA}$ as well) and repeat the folding described above. Repeat this 8 or 9 times. What do you see? Prove your claim.

∗ A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

∗∗ Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.

Problem of the month
March 2011

We are pleased to inform that Richard Dominguez wrote the best* solution for the February 2011 Problem of the Month. He has won the right to brag, and be correct in any mathematical discussion** that is held in March 2011. Congratulations Richard!

We thank all those who wrote solutions to last month's problem. We encourage you to keep submitting your solutions.

You will have until **March** 31^{st} to solve the problem below. Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

Bragging rights winners, solutions, future problems of the month, etc can be found on

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Problem for March 2011.
Assume that A_i $(i = 1, 2, \ldots, n)$ are the vertices of a regular n-gon inscribed in a circle of radius one. Find the value of:

1. $|A_1A_2|^2 + |A_1A_3|^2 + \ldots + |A_1A_n|^2$.
2. $|A_1A_2||A_1A_3| \ldots |A_1A_n|$.

where $|PQ|$ means the distance between the points P and Q.

$*$ A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

$**$ Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.