

The Puzzle Column

We think it might be fun and entertaining to introduce lightweight puzzles to our monthly newsletters to stimulate some curiosity and have our students (and staff!) have a go at solving them. Each newsletter carries a puzzle. We will post the names of the first 30 students who provide correct solutions in the next month's newsletter. Everyone is welcome to contribute new puzzles. Please email Nagendra.gulur@unt.edu for puzzle ideas and solutions to posted puzzles. Please start the subject line of your email with "PUZZLE:".

September Puzzle

Part 1: Consider the division: $y = a/b/c/d/..$. In how many different ways can the expression $a/b/c/d/..$ be parenthesized so as to evaluate to different values? For eg: consider $y = a/b/c$. This expression can be parenthesized in two ways: i. $y = (a/b)/c$ yielding $y = a/(bc)$ and ii. $y = a/(b/c)$ yielding $y = (ac)/b$. Now, when we are given an expression with n variables: $= a_1/a_2/a_3/.../a_n$, in how many unique ways can we parenthesize this expression so as to yield different evaluations?

Part 2: Given the division: $= 1/2/3/4/../2n$, is there a way to parenthesize this expression so as to achieve a value of $y = 1$ for some n ?