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SYNOPSIS

385 The Academy Corner: No. 14  Bruce Shawyer
Some solutions to the 1940’s University Scholarship Exams.

382 The Olympiad Corner: No. 185  R.E. Woodrow
Featuring problems from the 1994 Irish Mathematical Olympiad; the
questions and “official” results of the 38th IMO which was written in
Mar del Plata, Argentina, July 24 and 25, 1997; solutions to problems
of the Czechoslovakia Mathematical Olympiad 1993 [1996: 109]; and
readers’ solutions to 10 of the problems of the Baltic Way — 92 Contest
given in the May 1996 number of the Corner [1996: 157–159].

334 Book Reviews  Andy Liu
This month’s books are:
by Marcin Emil Kuczma,
reviewed by Andy Liu.

406 More Unitary Divisor Problems
K.R.S. Sastry
A (positive) integral divisor \( d \) of a (natural) number \( n \) is called a unitary
divisor of \( n \) if and only if \( d \) and \( \frac{n}{d} \) are relatively prime; that is \( (d, \frac{n}{d}) = 1 \).
For example, 9 is a unitary divisor of 18 because \( (9, \frac{18}{9}) = (9, 2) = 1 \).
But, 3 is not a unitary divisor of 18 because \( (3, \frac{18}{3}) = (3, 6) = 3 \neq 1 \).
This novel definition of divisibility produces interesting analogues
and contrasts with the results of ordinary divisibility. In this paper we
consider the solutions of two more new unitary divisor problems.

410 The Skoliad Corner: No. 25  R.E. Woodrow
Featuring the problems of the 1997 Alberta High School Mathematics
Prize Exam, second round; and solutions to the Concours Mathématique
du Québec 1995.

417 Mathematical Mayhem
Most senior high school students are familiar with the general solution to the quadratic equation \(ax^2 + bx + c = 0\). Either it is derived or given as a mere fact in class, and the notorious solution is

\[
x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.
\]

It is rarely the case, however, that the solution to the general cubic equation \(ax^3 + bx^2 + cx + d = 0\) is ever derived much less even mentioned. We go one step further and give the process of solving the general quartic (fourth degree) equation \(ax^4 + bx^3 + cx^2 + dx + e = 0\).

This month's "free sample" is


It is well known and easy to show that the product of any four consecutive positive integers plus one, is always a perfect square. It is also easy to show that the product of any two consecutive positive integers plus one is never a perfect square. It is possible that the product of three consecutive integers plus one is a perfect square. For example:

\[
2 \times 3 \times 4 + 1 = 5^2 \quad \text{and} \quad 4 \times 5 \times 6 + 1 = 11^2.
\]

(a) Find the next largest natural number \(n\) such that \(n(n+1)(n+2)+1\) is a perfect square.

(b) Are there any other examples?