Scan A7511

J. Meeus

One page

Thus, $3(\ln 2)^3 < \frac{4248743601}{4251528000} < 1.$

Taking the cube root of both sides gives

$$3^{3^{-1}} \ln 2 < 1,$$

and taking the antilog of both sides gives

$$2^{3^{3^{-1}}} < e.$$

1374. Single-Digit Factors by Charles W. Trigg. San Diego, CA (*JRM, 17:*1, p. 58)

Find a number composed of one-digit prime factors with a square that has eight distinct digits.

Solution by Many Readers:

$(2^8 \cdot 3 \cdot 7)^2 = (5376)^2 = 28901376$.

↑1375. Square Partitions by Jean Meeus, Erps-Kwerps, Belgium (*JRM, 17:*1, p. 58)

The number 2 can be written as $1^2 + 1^2$. The number 50 is the smallest integer which can be written in *two* different ways as the sum of the squares of two integers (not necessarily different):

$$50 = 1^2 + 7^2 = 5^2 + 5 \ .$$

The number 325 is the smallest integer which can be written in *three* different ways as the sum of the squares of two integers:

$$325 = 1^2 + 18^2 = 6^2 + 17^2 = 10^2 + 15^2.$$

For $n = 4$ to 10, what is the smallest integer $N(n)$ which can be written in exactly n different ways as the sum of the squares of two integers (not necessarily different)?

Commentary by Friend H. Kierstead, Jr.

Except for the wording, this problem is identical to Problem 590, *Sums of Squares*, in *JRM, 10:*1, page 46 (Solution in *JRM, 11:*2, page 137). The solution is the same now as it was then:

n	$N(n)$	n	$N(n)$	n	$N(n)$
1	2	9	71825	21-24	5928325
2	50	10	138125	25-32	29641625
3	325	11,12	160225	33-36	77068225
4	1105	13-16	801125	37-40	148208125
5,6	5525	17,18	2082925	41-48	243061325
7,8	27625	19,20	4005625	49-64	1215306625

Ah! The fra
is a repeated pr
Editor's Ten-Y
problem twice
happening agai

1376. Walking

For any pos

For each
90° right

When done
point. For exa
If N is confi
maximum valu
those values?

Solution by the

Let N = abc
facing increasin
X or Y by 1. It

X =
Y =

$D(N)$ is then $\sqrt$
To find the
difference of th
and therefore o
Now we try to
or Y must be ze
e = 4, and f = 5,
rest of the digit

$D($

To find the

a,b,
c,

Otherwise, by e
increased, thus
any assignment
produce the sam
$\sqrt{X^2 + (33 - X)}$