Hunt for solutions to a problem of Euler

KAPIL JOSHI

1. *Introduction*

A couple of years ago, a non-mathematician friend of mine who takes an interest in mathematics mainly as puzzles mentioned a problem of Euler.

Problem 1: Find a triple (a, b, c) of positive integers a, b, c with $a > b > c$ for which $a + b, a + c, b + c$ and $a - b, a - c, b - c$ are all perfect squares.

He pointed out that Euler had himself given one such triple:

$$(434657,\ 420968,\ 150568). \tag{1}$$

It is easy to verify that this is a valid triple. Indeed:

$$\begin{aligned}
434657 + 420968 &= 855625 = 925^2\\
434657 + 150568 &= 585225 = 765^2\\
420968 + 150568 &= 571536 = 756^2\\
434657 - 420968 &= 13689 = 117^2\\
434657 - 150568 &= 284089 = 533^2\\
420968 - 150568 &= 270400 = 520^2
\end{aligned}$$

Even this verification is hardly possible without a calculator (unless you are von Neumann or Shakuntala Devi)! So one keeps wondering how on earth Euler thought of the crazy triple (1) in the first place. Contrast this with Pythagorean triples where (3, 4, 5) is the simplest example and after some trials you discover a pattern, i.e. for any positive integers m and n with $m > n$,

$$(m^2 - n^2,\ 2mn,\ m^2 + n^2) \tag{2}$$

is a Pythagorean triple. (The simplest example corresponds to the case $m = 2$, $n = 1$.) Indeed it is easy to show every Pythagorean triple is obtained this way up to a common factor of the entries.

As a result, Problem 1 actually decomposes into three progressively more difficult problems:

(a) Finding a few more examples of Eulerian triples

(b) Finding infinitely many Eulerian triples (with the understanding that triples which are scalar multiples of each other by a factor of the form k^2 (or $1/k^2$) for an integer k are not to be distinguished)

(c) Characterising all Eulerian triples.

As there are no 'obvious' Eulerian triples, even (a) is challenging. When this problem was posed on a Whats App group, a student, Peeyush Jha, came up with another Eulerian triple:

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

$$(a, b, c) = (2399057,\ 2288168,\ 1873432). \tag{3}$$

The verification of validity is left to the reader. We only remark that the square roots of $a + b$, $a - b$, $a + c$, $a - c$, $b + c$ and $b - c$ are, respectively, 2165, 333, 2067, 725, 2040 and 644. But once again, the enigma remains, viz. what is the genesis of the triple in (3)?

In answering this, Peeyush Jha said that he began by taking a, b, c in the form

$$a = u^2y^2 + v^2x^2 \tag{4}$$

$$b = u^2x^2 + v^2y^2 \tag{5}$$

$$\text{and} \qquad c = 2uvxy \tag{6}$$

for some integers x, y, u, v. This takes care of $a \pm c$ and $b \pm c$ being perfect squares. As for the remaining two squares,

$$a + b = (u^2 + v^2)(x^2 + y^2) \tag{7}$$

$$\text{and} \qquad a - b = (u^2 - v^2)(y^2 - x^2). \tag{8}$$

So the construction of an Eulerian triple reduces to finding four positive integers u, v, x, y with $u > v$, $x < y$ such that both $(u^2 + v^2)(x^2 + y^2)$ and $(u^2 - v^2)(y^2 - x^2)$ are perfect squares. Once such integers are found all one has to do is to define a, b, c using (4), (5) and (6) to get an Eulerian triple (a, b, c).

But Peeyush Jha gave no construction for obtaining such integers. Nor did he say which values of u, v, x, y yield the particular triple (3). Hunting for them by trial is little better than hunting for a, b, c by trial in the first place. (Reportedly, Jha obtained (3) by running a Java program.)

So the hunt remained without much progress for about a year until another Jha, Anurag Jha, reduced it still further. As a result, a few more Eulerian triples could be constructed. But whether there are infinitely many of them still remained open. In the meanwhile, my attention was drawn to a couple of papers. One of them ([1]) proved that Problem 1 is equivalent to another problem (also of Euler). The other paper ([2]) gave Euler's construction to generate infinitely many solutions to the other problem and thereby, because of the equivalence of the two problems, infinitely many Eulerian triples too. Characterising all such triples still remains open.

We shall give the outcome of Anurag Jha's method in the next section. In the third section, we shall give the equivalent problem by Euler and in the fourth section, his construction for solving it. Together we shall have infinitely many solutions to Problem 1.

2. *An improved hunt*

If we multiply (7) and (8) together, we get

$$a^2 - b^2 = (u^4 - v^4)(y^4 - x^4). \tag{9}$$

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

Since $a + b$ and $a - b$ are squares, so is $a^2 - b^2$. So we have a square which factorises into two factors both of which are differences of fourth powers of integers.

Of course, the single equation (9) is not as strong as the pair of (7) and (8) jointly. For even if we are able to get five integers u, v, x, y and t such that

$$t^2 = (u^4 - v^4)(y^4 - x^4) \tag{10}$$

we do not know how to factorise t^2 as $(a + b)(a - b)$ so that (7) and (8) hold separately. But Anurag Jha showed that even from (10) we can obtain an Eulerian triple (a, b, c). We skip the details of what led him to this method except to remark that the starting point is to observe that inside every Eulerian triple (a, b, c), there is a Pythagorean triple $(\sqrt{a-b}, \sqrt{b-c}, \sqrt{a-c})$ which makes crucial use of the structure of Pythagorean triples. (For the Eulerian triple (1), the associated Pythagorean triple is (117, 520, 533) while the Eulerian triple (3) gives rise to the Pythagorean triple (333, 644, 725)). Instead, we give the final outcome of Anurag Jha's method.

Actually, we only need to know that u, v, x, y are so found that (10) holds for *some* integer t. The value of t is immaterial because we now *define* a, b, c explicitly in terms of u, v, x and y by the following formulas (not to be confused with the formulas (4)-(6), which we may now safely forget).

$$a = \tfrac{1}{2}(u^4 + v^4)(x^4 + y^4) \tag{11}$$

$$b = a - (u^2x^2 - v^2y^2)^2 \tag{12}$$

and

$$c = \left| a - (u^2x^2 + v^2y^2)^2 \right|. \tag{13}$$

We can drop the absolute value in the last formula if we allow the last entry c of an Eulerian triple (a, b, c) to be negative. (This is harmless because $a \pm c$ and $b \pm c$ are both involved in the defining condition of an Eulerian triple.)

If we drop the absolute value sign, then because of (10), $b + c$ is a perfect square. Verification of the other five conditions is trivial. Hence (a, b, c) is indeed an Eulerian triple. (Depending on the parities of u, v, x, y, sometimes a may come out to be an odd multiple of $\frac{1}{2}$. But in that case we consider the triple $(4a, 4b, 4c)$.)

It may be argued that finding integers u, v, x, y for which $(u^4 - v^4)(y^4 - x^4)$ is a perfect square is still a matter of trial. But this trial is more manageable. As a cosmetic simplification, note that the formulas above involve only even powers of the integers u, v, x, y. So writing $U = u^2, V = v^2, X = x^2$ and $Y = y^2$, we want $(U^2 - V^2)(Y^2 - X^2)$ to be a perfect square where U, V, X, Y are themselves perfect squares. This can be done by preparing a table of values of $M^2 - N^2$ for various perfect squares M and N (with $M > N$) and selecting two (distinct) entries whose product is a perfect square. The table below shows the values of $M^2 - N^2$ for single

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

digit M and N with $M \geqslant N$.

M^2 \ N^2	1	4	9	16	25	36	49	64	81
1	0								
4	5·3	0							
9	10·8	**13·5**	0						
16	17·15	20·12	25·7	0					
25	26·24	29·21	34·16	41·9	0				
36	37·35	40·32	45·27	52·20	61·11	0			
49	50·48	53·45	89·40	65·33	74·24	85·13	0		
64	65·63	68·60	73·55	80·48	89·39	100·28	113·15	0	
81	82·80	85·77	90·72	97·65	106·56	117·45	**130·32**	145·17	0

(Note that we have written the entries in the factorised form, because, ultimately, it is these factors that we need. Also, to save space, for integers a and b, the product ab is denoted by $a{\cdot}b$ rather than by $a \times b$.)

As a simple example, the product of the two bold faced entries, 13×5 and 130×32 is a perfect square (although neither of them is). This suggests that we can take $U = 9$, $V = 4$, $X = 49$ and $Y = 81$. Putting these values into the formulas above,

$$a = \tfrac{1}{2}(U^2 + V^2)(X^2 + Y^2) = \tfrac{1}{2}(81 + 16)(2401 + 6561)$$
$$= 97 \times 4481 = 434657$$
$$b = 434657 - (UX - VY)^2 = 434657 - (441 - 324)^2$$
$$= 434657 - 117^2 = 420968$$
$$\text{and } c = \left|434657 - (UX + VY)^2\right| = \left|434657 - (441 + 324)^2\right|$$
$$= \left|-150568\right| = 150568.$$

These are exactly the entries of Euler's triple (1) with which we started. We can also unravel the genesis of the triple (3) by taking the product

$$(23^4 - 7^4)(2^4 - 1^4) = (529 + 49)(529 - 49) \times 15$$
$$= 578 \times 480 \times 15$$
$$= 17 \times 17 \times 2 \times 32 \times 15 \times 15$$
$$= (17 \times 8 \times 15)^2.$$

We leave it to the reader to check that the Eulerian triple resulting from this

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

factorisation is (3).

How did we think of these magic factorisations which gave rise to triples (1) and (3)? The answer lies in the details of how Anurag Jha arrived at formulas (11), (12) and (13), which we have skipped. But we illustrate how it works with the Eulerian triple (3). We remarked earlier that its associated Pythagorean triple is (333, 644, 725), which is primitive since its entries are relatively prime to each other. So we can write it in the form (2). Easy calculations give $m = 23$, $n = 14$. The idea is to factorise each into two factors and pick (u, v) as one pair of factors and (x, y) as the other so that $(u^4 - v^4)(y^4 - x^4)$ is a perfect square. So we write $m = 23 \times 1$ and $n = 7 \times 2$. We take $u = 23$, $v = 7$ which forces $x = 1$, $y = 2$. We already know that this works. Admittedly, there is still an element of trial here. But here the trial is narrowed down to a finite (and a fairly small) number of possibilities.

This method fails for the Eulerian triple (1), because its associated Pythagorean triple (117, 520, 533) is not primitive since 13 is a common factor of all the terms. But if we replace 150568 by its negative, then (allowing the last entry of an Eulerian triple to be negative), (434657, 420968, −150568) is also an Eulerian triple. The calculations after (1) are still valid, except that the associated Pythagorean triple now is (117, 756, 765). This is not primitive either. But the g.c.d. of the entries is 9, which is a perfect square. So this Pythagorean triple can be cast in the form (2), with $m = 21$ and $n = 18$. This time we factorise 21 as 7×3 and 18 as 9×2. So one possible pairing of factors is to take $(u, v) = (3, 2)$ and $(x, y) = (7, 9)$. We have already verified that it works. (In fact, in the calculations above, originally c came out to be −150568.)

When we want to generate new Eulerian triples, we go the other way. That is, we begin with some u, v, x, y for which $(u^4 - v^4)(y^4 - x^4)$ is a perfect square. (It is tempting to achieve this by taking $x = v$, $y = u$. But in that case $b = a$ by (12) which contradicts $a > b > c$.) Moreover, not every Pythagorean triple of the form (2) gives rise to an Eulerian triple, unless m, n have the magic factorisations. So here we essentially go by trial which is faciliated by the table above and its extensions.

For example, if we add two more rows (corresponding to $M^2 = 100$ and $M^2 = 121$) and two more columns (corresponding to $N^2 = 100$ and $N^2 = 121$), to the table above, we can take take $u = 3, v = 2, x = 2$ and $y = 11$. This is a valid choice because

$$(u^4 - v^4)(y^4 - x^4) = 65 \times 125 \times 117 = (25 \times 13 \times 2)^2.$$

This time $u^4 + v^4$ and $x^4 + y^4$ are both odd. So to get an Eulerian triple we must take $4a$ rather than a. We leave it to the reader to check that the resulting Eulerian triple is (2843458, 2040642, 1761858).

One can construct more Eulerian triples by this method. But to begin with you need to identify positive integers u, v, x, y and t such that (10) holds. There is no known formula for systematically generating infinitely many such quintuples, in contrast with the formula (2) which generates

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

infinitely many Pythagorean triples. So although this method sometimes works to unravel the genesis of a given Eulerian triple, it is of limited use in generating others. Fortunately, there is such a formula applicable for an equivalent problem. We state the equivalent problem in the next section and afterwards a formula to generate infinitely many solutions to it.

3. *An equivalent problem*

Euler himself gave another problem at about the same time as Problem 1.

Problem 2: Find three positive integers x, y, z with $x > y > z$ such that $x^2 - y^2, x^2 - z^2$ and $y^2 - z^2$ are all perfect squares.

Euler gave (697, 185, 153) as an example of such a triple. Its validity follows by a direct calculation (this time a calculator is not a must!) because

$$697^2 - 185^2 = 882 \times 512 = 441 \times 1024 = (21 \times 32)^2$$

$$697^2 - 153^2 = 850 \times 544 = 17 \times 50 \times 17 \times 32 = (17 \times 40)^2$$

$$185^2 - 153^2 = 338 \times 32 = 169 \times 64 = (13 \times 8)^2.$$

We claim that these two problems are equivalent, not in the sense that their solutions are identical, but only in the sense that a solution to either problem leads to a solution to the other.

Theorem 1: Problem 1 is equivalent to Problem 2.

Proof: Suppose (a, b, c) is a solution to Problem 1, i.e. (a, b, c) is an Eulerian triple. Then we simply take $x^2 = a + b$, $y^2 = a + c$ and $z^2 = b + c$. Then $x^2 - y^2 = b - c$, which is a square by the very definition of an Eulerian triple. Similarly, $x^2 - z^2$ and $y^2 - z^2$ are squares.

The converse is not so obvious. Suppose $x > y > z > 0$ are integers for which $x^2 - y^2$, $x^2 - z^2$ and $y^2 - z^2$ are perfect squares. The desired Eulerian triple (a, b, c) can be found simply by solving the system of linear equations

$$a + b = x^2, \qquad a + c = y^2 \qquad \text{and} \qquad b + c = z^2.$$

The solutions are given, quite explicitly, by

$$a = \tfrac{1}{2}\left(x^2 + y^2 - z^2\right) \tag{14}$$

$$b = \tfrac{1}{2}\left(x^2 - y^2 + z^2\right) \tag{15}$$

$$c = \tfrac{1}{2}\left(y^2 - x^2 + z^2\right). \tag{16}$$

Note that when x, y, z are all odd or exactly one of them is odd, a, b, c are odd multiples of $\frac{1}{2}$. (In all other cases, all three of them are even multiples.) When this happens, we double x, y, z. We then get

$$\left(2\left(x^2 + y^2 - z^2\right),\ 2\left(x^2 - y^2 + z^2\right),\ 2\left(y^2 - x^2 + z^2\right)\right)$$

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

as an Eulerian triple.

For example, from the solution (697, 185, 153) of Problem 2, we get the Eulerian triple (993250, 949986, 856350). (Note that the calculations above actually give the last entry as −856350. But we have replaced it by its absolute value. That explains why starting from this Eulerian triple we do not get back (697, 185, 153). See the comment made after (13).)

Now since every solution to Problem 2 leads to an Eulerian triple, if we can show that Problem 2 has infinitely many solutions, then it would follow that there are infinitely many Eulerian triples. The next section does just that.

4. *Generating solutions to Problem* 2

We remark that although Problem 2 deals with triples of integers the differences of whose squares are squares of integers, we might as well allow triples whose entries are rational and the differences of whose squares are squares of rational numbers. For we can multiply all entries by the common denominator of the entries and then use the fact that if an integer is the square of some rational then that rational is an integer.

This extension gives us considerable freedom in doing algebraic manipulations. In integers division is restricted. But you can divide any rational by every (non-zero) rational to get another rational number. As we shall be dealing exclusively with squares of rational numbers, when we say something is a square, we mean that it is the square of some rational number, unless stated otherwise.

So from now on a solution to Problem 2 is an ordered triple (x, y, z) where x, y, z are some rational numbers such that $x^2 - y^2$, $x^2 - z^2$ and $y^2 - z^2$ are squares. We divide throughout by z^2 and express this requirement by

$$\frac{x^2}{z^2} - \frac{y^2}{z^2} = \text{square} \tag{17}$$

$$\frac{x^2}{z^2} - 1 = \text{square} \tag{18}$$

$$\text{and } \frac{y^2}{z^2} - 1 = \text{square}, \tag{19}$$

where by a ‘square’ we mean the square of some rational number (which is unspecified and unimportant for our purpose and which can take different values in different equations and even in the same equation when it is transformed, for example, by multiplying throughout by the square of some rational.)

As a result, the search for a solution to Problem 2 is reduced to a search for two rational numbers $\frac{x}{z}$ and $\frac{y}{z}$ for which (17)-(19) hold. We now introduce a series of new variables to transform these requirements

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

eventually to requiring that a certain expression is a square. If we set $p = \dfrac{\sqrt{x^2 - z^2}}{x - z}$ then $p^2 = \dfrac{x + z}{x - z}$ and hence

$$\frac{p^2 + 1}{p^2 - 1} = \frac{x}{z}. \tag{20}$$

This gives

$$\frac{x^2}{z^2} - 1 = \frac{(p^2 + 1)^2 - (p^2 - 1)^2}{(p^2 - 1)^2} = \frac{4p^2}{(p^2 - 1)^2} = \text{square}.$$

Hence (18) is automatically satisfied.

Similarly, the substitution $q = \dfrac{\sqrt{y^2 - z^2}}{y - z}$ ensures that (19) is satisfied because $\dfrac{y}{z} = \dfrac{q^2 + 1}{q^2 - 1}$. For (17) we need more work. In terms of p and q, (17) becomes

$$\frac{4(p^2q^2 - 1)(q^2 - p^2)}{(p^2 - 1)^2(q^2 - 1)^2} = \text{square},$$

which is equivalent to saying that the numerator is a square. Further, on dividing by $4p^2$, which is itself a square, the requirement becomes

$$(p^2q^2 - 1)\left(\frac{q^2}{p^2} - 1\right) = \text{square}.$$

Instead of p and q, it is a little more convenient to work with p and the ratio $\frac{q}{p}$. Calling this ratio m, the requirement above becomes

$$(m^2p^4 - 1)(m^2 - 1) = \text{square}.$$

This is trivially satisfied if either $m = \pm 1$ or $p = 1$. The former would mean $p^2 = q^2$ and hence $x = y$, which leads to a degenerate solution to Problem 2. The possibility $p = 1$ is ruled out too as it implies $z = 0$ which again means a degenerate solution. So we replace p by $1 + s$ and look for solutions to

$$(m^2(1 + s)^4 - 1)(m^2 - 1) = \text{square}$$

with $m \neq \pm 1$ and $s \neq 0$. Expansion of $(1 + s)^4$ makes this

$$(m^2 - 1 + m^2(s^4 + 4s^3 + 6s^2 + 4s))(m^2 - 1) = \text{square}.$$

Dividing by $(m^2 - 1)^2$, which is a square, this becomes

$$1 + \frac{m^2}{(m^2 - 1)}(s^4 + 4s^3 + 6s^2 + 4s) = \text{square} \tag{21}$$

or

$$1 + ns^4 + 4ns^3 + 6ns^2 + 4ns = \text{square}, \tag{22}$$

where $n = \dfrac{m^2}{m^2 - 1}$. All the conversions made so far are reversible. So if

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

we can show that (22) and hence (21) holds for some $m \neq 1$ and $s \neq 0$, then we would know $p\,(=1+s)$, $q\,(=mp)$ and then the ratios $\frac{x}{z}$ and $\frac{y}{z}$ which satisfy (17) and thereby get (x, y, z) as a solution to Problem 2.

We claim that for every (rational) $n\,(\neq 1)$, we can find some rational s such that (22) holds. This problem is qualitatively different from showing that some fourth degree polynomial equation has a solution because here the right-hand side is not a fixed number. So we follow a different strategy.

It would be great if the left-hand side of (22) were the square of some quadratic polynomial in s, i.e. if we could find a polynomial of the form $1 + fs + gs^2$ such that

$$\left(gs^2 + fs + 1\right)^2 = ns^4 + 4ns^3 + 6ns^2 + 4ns + 1 \tag{23}$$

where f, g are some functions of n. If this happens then (22) will hold for every n and every s. But this attempt is doomed right at the start because if there is such a polynomial at all, then g^2 will have to equal n and in general n is not a square (as happens, for example, when $m = 2$, for then $n = \frac{4}{4-1} = \frac{4}{3}$).

Nevertheless, with a suitable choice of f and g, we can so arrange things that the two sides of (22) match as far as powers of s of degree 0, 1 and 2 are concerned. For this we must solve the system $2f = 4n$, $f^2 + 2g = 6n$. Easy calculations give

$$f = 2n$$

$$\text{and} \qquad g = 3n - 2n^2.$$

What about the terms involving s^3 and s^4 that do not match even with these values of f and g? It may still happen that together they may match for some value(s) of s and in that case (23) will hold, not identically, but still for these values of s. Trivially, $s = 0$ is one such value. But it is of no use to us. Still, there is also a non-zero value. Focusing on the terms involving s^3 and s^4, we want some $s \neq 0$, such that

$$\left(3n - 2n^2\right)^2 s^4 + 2\left(3n - 2n^2\right)(2n)\, s^3 = ns^4 + 4ns^3.$$

Cancelling s^3, which is non-zero, we get

$$\left(3n - 2n^2\right)^2 s + 2\left(3n - 2n^2\right)(2n) = ns + 4n$$

and hence $s = \dfrac{4n - 4n\left(3n - 2n^2\right)}{(3 - 2n)^2 n^2 - n}$. On simplification (and after cancelling the factor $n - 1$), this becomes

$$s = \frac{8n - 4}{4n^2 - 8n + 1}. \tag{24}$$

Note that since n is rational, the right-hand side of (24) is also rational.

Summing up, if $n(\neq 1)$ is a given rational, then with this value of s, s is a square and the left-hand side of (23) which equals $\left((3n - 2n^2)s^2 + 2ns + 1\right)^2$ is also a square. A brute force verification will be horrendous.

This completes the proof that there are infinitely many solutions to

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press

Problem 2 and hence to Problem 1 too. In fact, we now have an explicit construction to generate them. Start with any (rational) m other than ± 1. Then systematically determine n as $\dfrac{m^2}{m^2 - 1}$ and then s by (24). That gives $p = 1 + s$ and then $q = mp$. From p and q we get the ratios $\frac{x}{z}$ and $\frac{y}{z}$ using (20) and its (unnumbered) analogue for $\frac{y}{z}$. Bring them to a common denominator to get a triple which is a solution to Problem 2.

As a concrete example, suppose $m = 2$. Then progressively, we have

$$n = \frac{4}{3}, \qquad s = -\frac{60}{23}, \qquad p = -\frac{37}{23}, \qquad q = -\frac{74}{23}$$

$$\frac{x}{z} = \frac{949}{420}, \qquad \frac{y}{z} = \frac{6005}{4947}.$$

The least common multiple of 420 and 4947 is 140×4947. Multiplying $\frac{x}{z}$ and $\frac{y}{z}$ by this multiple, we get

$$x = 1564901, \qquad y = 840700, \qquad z = 692580$$

as a solution to Problem 2. The corresponding Eulerian triple, obtained by using (14)-(16), is (a, b, c) where

$$a = 2\left(2403299^2 + 840700^2\right)$$

$$b = 2\left(1319901^2 + 692580^2\right)$$

$$\text{and} \qquad c = 2\left(1403299^2 - 840700^2\right)$$

which are too big to fit an ordinary calculator.

To conclude, the present section is essentially a duplication of Section 2 of [2].

Acknowledgement

I thank the referee for several helpful suggestions.

References

1. J. Leech, The rational cuboid revisited, *Amer. Math. Monthly*, **84** (1977) pp. 518-533.
2. Robin Hartshorne and Ronald van Luihk, *Non-euclidean Pythagorean triples, a problem of Euler, and rational points on K3 surfaces*, available at arXiv:math/0606700v1

10.1017/mag.2025.10066 © The Authors, 2025
Published by Cambridge University Press
on behalf of The Mathematical Association

KAPIL JOSHI
13 Kshipra Society,
Karvenagar,
Pune 411052, India
e-mail: *kdjoshi314@gmail.com*

https://doi.org/10.1017/mag.2025.10066 Published online by Cambridge University Press