Q: What is sq root of 9?

A: 3 or -3

I REFER to the letter by Dr Phil Stephenson, "Square root of 9: -3 or 3?" (ST, Jan 10). Dr Stephenson says that students in secondary schools and junior colleges are being taught that the square root of 9 can be either 3 or -3. He asserts that the square root of 9 should be 3 (only).

The fact is the square root of a number yields both a positive or a negative answer. Let's assume that Dr Stephenson's claim is correct. If -3 is not considered the square root of 9, then essentially he is saying that -3 squared is not equal to 9, which is obviously not true.

Hence, the square root of 9 should correctly be +3 or -3.

GOH BENG HU

I BEG to differ from Dr Stephenson; 9 is not only the square of 3. It is also the square of -3. Finding the square root is the inverse of squaring. The square roots of 9 are the second roots of the square of +3 and of the square of -3. Therefore, the square roots of 9 are +3 and -3.

In the field of real numbers (mathematics students know what I mean), every number has two nth roots, if n is even. These two roots are equal in absolute value but opposite in signs. For example, +2 raised to the power of 6 is 64 and the same is also true of -2. Therefore, the 6th (6 is an even number) roots of 64 should be +2 and -2. 64 has four other 6th roots but they are complex numbers.

EE TECK EE

THE concept — "the square root of 9 is 3 (only)" — is false. The square root of a number x is a number r such that $x = r^2$. Therefore, any positive real number has two square roots, ie, one positive and one negative.

For example, 9 has two square roots, 3 *and* -3 (not *or*). The non-negative root is called the Principal Square Root. In common usage, we normally take the Principal Square Root.

But we also have the other square root; in this case it is -3.

SAM KONG SAN (DR)

DR PHIL Stephenson is wrong. Unlike squaring, taking the square root is not a function; it does not make sense to talk about "the" square root of a number.

A number x is a square root of y if the square of x equals y. Both 3 and -3 are square roots of 9, because the squares of both 3 and -3 are 9.

With the real numbers, there is a reasonable choice for the "primary" square root of a number, namely the positive one. But for other number systems, such as the complex numbers, there need be no such choice. Which does Dr Stephenson think is "the" square root of 2+3i (the complex number with real part 2 and imaginary part 3)?

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