- Maybe "b" should be included in the equation for complex numbers.
- The norm is equal to the squares of "a" and "b" combined - the norm sqaured is equal to "a" squared + "b" squared.
- There is also a useful identity to help work with complex numbers.
- Cosine theta is equal to the real part of the complex number, and sine theta is equal to the imaginary part of the complex number.
- The complex number at the unit radius is equal to cosine theta + i sine theta.
- Complex numbers are used throughout electromagnetism and classical mechanics, but not directly relevant because all quantities dealing with those subjects are real.
- However, quantum mechanics requires the use of complex numbers, as equations involve the number 'i' and physical solutions must be complex.
- When psi is real, the derivative becomes imaginary, resulting in a contradiction and therefore needing complex numbers to solve solutions.
- The famous and nontrivial result is that complex numbers can be represented as a sum of a real and imaginary part, with the imaginary part having a vertical projection, equal to e to the 'i' theta.
- They're not auxiliary, but you can never measure a complex number.
- Anything that you measure is a real number, which raised the issue of physical interpretation of a wave function if it was a complex number.
- Max Borne had the idea that you had to calculate the real number (called the norm of this squared), which is proportional to probabilities.
- Schrodinger and Einstein disagreed with this idea, but their wrong thoughts can teach us a lot.
- The EPR paper was wrong, but it led to extremely important discoveries.