

Algebra Challenge:
Proof or Counterexample
Part 1

For each statement below, either prove it (start with the left-hand side of the equation, and show step-by-step how to arrive at the right-hand side), or give a counterexample (substitute specific numbers in for the letters to show that the statement is false in general).

1. $(a + b)^2 = a^2 + b^2$

2. $\sqrt{a + b} = \sqrt{a} + \sqrt{b}$

3. $(a^2)^3 = a^6$