

This miniproject asks you to determine whether or not a conjecture is true. It relies heavily on the concept of divisibility.

Is it possible to find two different positive integers, where one is a multiple of the other, such that the sum of their squares is a perfect cube and such that the sum of their cubes is a perfect square?

If it is possible, find such a pair (and show the reasoning that leads to your answer). If not, prove that it is impossible (Hint: Generally to prove that something is impossible you assume that it is possible and arrive at a contradiction).