

### Problem 3: Freshman's Dream Modified

---

A common algebra mistake known as “freshman’s dream” is to assume that  $(a+b)^2 = a^2 + b^2$ . While it is not true that  $(2+3)^2 = 2^2 + 3^2$ , it is true that  $(2+3)^2 = (2+1)^2 + (3+1)^2$ . Find all integer values  $m$  and  $n$  such that  $(m+n)^2 = (m+1)^2 + (n+1)^2$ .

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

---

Posting Date 2/1/2019. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 4 pm on 2/15/2019.