

MAT Problems A - Integers (1 page; 14/9/17)

[Note: These are all included in the STEP Problems]

(1) Show that the product of 4 consecutive positive integers is never a perfect square.

(2) Show that numbers of the form $4(n - 1)^2 + 2$ can never be one more than a multiple of 3, where n is a positive integer.

(3) Find all positive integer solutions of the equation

$$xy - 8x + 6y = 90$$

(4) Can n^3 equal $n + 572$ (where n is a positive integer)?