

Name _____ ID _____

Activity 8-1 (23 Aug 2022)

1. ให้ F_0, F_1, F_2, \dots เป็นลำดับ Fibonacci กล่าวคือให้ $F_0=0, F_1=1, F_2=1$ และ $F_{i+1}=F_i+F_{i-1}$

สำหรับ $i \geq 2$ จงพิสูจน์ประโยคด้านล่างโดยใช้การอุปนัยเชิงคณิตศาสตร์ (mathematical induction)

สำหรับ n ใด ๆ ที่ $n \geq 1$, $F_{2n} \geq 2^{n-1}$

2. In a village, there are n houses built along a single road. They plan to plant gardens in front of the houses; therefore they have to choose a set of houses to host the gardens. Since they do not want to plant too many gardens, they do not want to have two gardens on consecutive houses. In how many ways can they choose a set of houses such that no two consecutive houses are in the set? (It is possible that, in the end, they do not plant any garden at all.)

For example, if we have 3 houses these are the 5 ways to choose houses. (is chosen; o is not) The first example does not choose any houses.*

1	2	3
o	o	o
*	o	o
*	o	*
o	*	o
o	o	*