Math 55 Quiz 7   Name: _____
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1. Find a closed form for the generating functions of the following sequences *(2 points each)*.

   (a) $a_n = 3^n + 1$

   (b) $a_n = \begin{cases} 2 & : n \text{ even} \\ -2 & : n \text{ odd} \end{cases}$

   (c) $a_n = \begin{cases} 1 & : 5 \mid n \\ 0 & : \text{ else} \end{cases}$

2. (a) Find a recurrence relation for the number of bit strings of length n that contain a pair of consecutive 0s *(2 points)*.

   (b) How many bit strings of length 7 contain a pair of consecutive 0s? *(2 points)*.