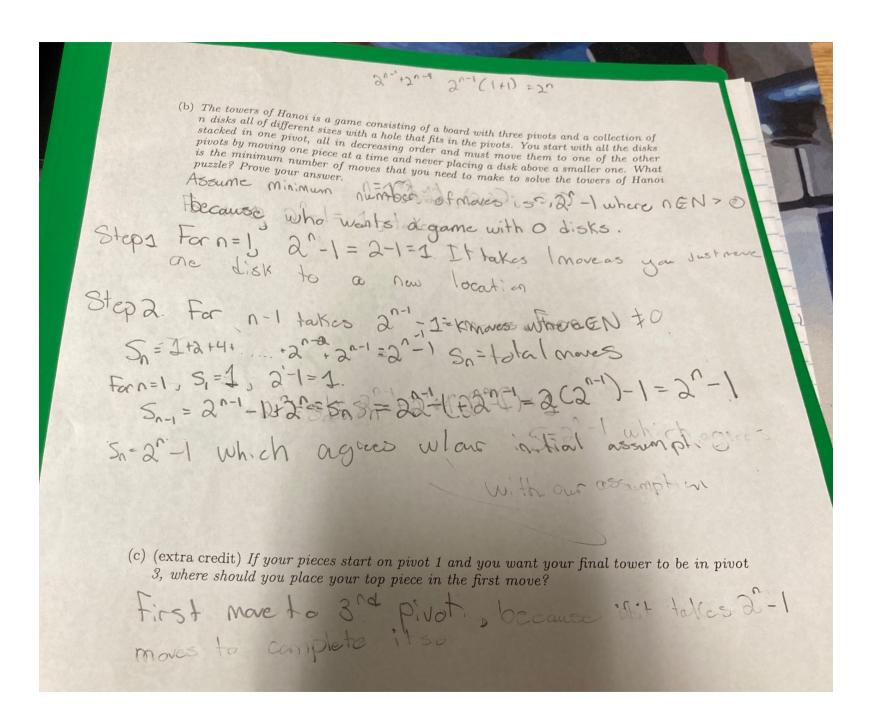
1. Quiz 3, Monday September 20. Instructions: SHOW YOUR WORK in order to receive credit. Include proofs and justification for your assertions, with words and equations. Question 1. (a) Let  $a \in \mathbb{R} - \{1\}$ . Show that  $S_n = 1 + a + a^2 + \dots + a^{n-1} + a^n = \frac{a^{(n+1)}-1}{a-1}$ .  $N = 0, S_0 = 1 = \frac{Ca^{+1} - 1}{a - 1} = \frac{a^{-1}}{a - 1} = 1$   $Prove for n - 1, S_{n-1} = \frac{a^{-1} - 1}{a - 1} = \frac{a^{-1}}{a - 1}$   $S_{n-1} + a^n = S_n = \frac{a^{n-1}}{a - 1} + \frac{a^n - a^n}{a - 1} = \frac{a^{n-1}}{a - 1}$ 

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