# Practice Recurrence Problems
## Concrete Mathematics, March 21, 2019

Given the following recurrence relationships, develop a general formula for $a_n$

1. $a_n = 2a_{n-1} + n - 1; a_0 = 1$

2. $a_n = 3^{n-1} + 4a_{n-1}; a_0 = 0$

3. $a_n = \alpha a_{n-1} + \beta; a_0 = 0$

4. $a_n = 2a_{n-1} - a_{n-2} + n - 2; a_0 = 0, a_1 = 1$

5. $a_n = 3a_{n-1} - 2a_{n-2} + n - 2; a_0 = 0, a_1 = 1$

6. $a_n = \frac{1}{3}a_{n-1} + 1; a_0 = 0$