

Quiz 9

1. $b_n = 5b_{n-1} - 6b_{n-2}$

(a) $X^n = 5X^{n-1} - 6X^{n-2}$

$$X^n - 5X^{n-1} + 6X^{n-2} = 0; \quad X^2 - 5X + 6 = 0$$

$$(X-2)(X-3) = 0 \Rightarrow X = 2, 3$$

(b) $b_n = A \cdot 3^n + B \cdot 2^n$

(c) $b_2 = 5 \cdot b_1 - 6b_0 = 5 \cdot 2 - 6 \cdot 1 = 4$

2. (a) $b_n = A \cdot 3^n + B(-2)^n$

(b) $1 = b_0 = A + B \Rightarrow 2 = 2A + 2B$

$$2 = b_1 = 3A - 2B \Rightarrow 2 = 3A - 2B$$

$$\underline{4 = 5A + 0B} \Rightarrow$$

$$A = 4/5, \quad B = 1/5,$$

$$b_n = \frac{4 \cdot 3^n + (-2)^n}{5}$$

(c) $b_2 = b_1 + 6b_0 = 2 + 6 \cdot 1 = 8$