

Exame Recurso - 14/15

5

$$a_n = a_{n-1} + 6a_{n-2}$$

Ass. Homog.

$$a_n - a_{n-1} - 6a_{n-2} = 0$$

$$x^n - x^{n-1} - 6x^{n-2} = 0$$

$$x^{n-2}(x^2 - x - 6) = 0$$

$$x^2 - x - 6 = 0$$

$$x = \frac{1 \pm \sqrt{1+24}}{2}$$

$$x = \frac{1 \pm 5}{2}$$

$$x = 3 \vee x = -2$$

$$a_n = C_0 \cdot 3^n + C_1 \cdot (-2)^n$$

$$\begin{cases} a_0 = C_0 \cdot 3^0 + C_1 \cdot (-2)^0 \\ a_1 = C_0 \cdot 3^1 + C_1 \cdot (-2)^1 \end{cases} \Leftrightarrow \begin{cases} 4 = C_0 + C_1 \\ 4 = 3C_0 - 2C_1 \end{cases} \Leftrightarrow \begin{cases} - \\ 12 = 5C_0 \end{cases} \Leftrightarrow \begin{cases} C_0 = \frac{12}{5} \\ C_1 = \frac{8}{5} \end{cases}$$

$$a_n = \frac{12}{5} (3^n) + \frac{8}{5} \cdot (-2)^n$$

7.

G é uma árvore

$$E(G) - V(G) + cc(G) = 0$$

$$cc(G) = 1$$

$$V(G) = 17 + r$$

$$E(G) = V(G) - cc(G) = 17 + r - 1 = 16 + r$$

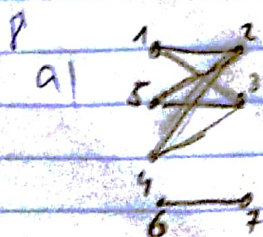
$$\sum_{v \in V(G)} dg(v) = 2|E(G)|$$

$$17 + 1 + 5r = 2(16 + r)$$

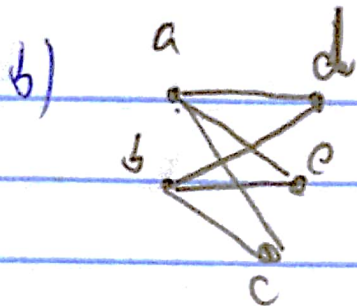
$$17 + 5r = 32 + 2r$$

$$3r = 15$$

$$r = 5$$



Bipartite: $\{1, 4, 5, 6, 7\}, \{2, 3\}$



$$a - 2$$

$$b - 3$$

$$d - 1$$

$$e - 5$$

$$c - 4$$

$$c) \quad T(\square) = T(\square) + T(\square) = 4 + 8 = 12$$

$$T(\square) = T(\square) + T(\square) = 4 + 2 \cdot 2 = 8$$