Solve and check the following linear, homogeneous, constant coefficient recurrence relations giving full details.

1. $S_n - 4S_{n-1} = 0 \qquad n \geqslant 1 \qquad S_0 = 2$
2. $T_n - 3T_{n-1} + 2T_{n-2} = 0 \qquad n \geqslant 2 \qquad T_0 = 2,\ \ T_1 = 0$
3. $Q_n - 4Q_{n-1} + 4Q_{n-2} = 0 \qquad n \geqslant 2$

   When no initial conditions are given, you only need to give the general solution, and then CHECK.