

$$\begin{aligned}
T(n) &= n * T(n-1) + 2 * n - 1 \\
&= 2 * n - 1 + n * (2(n-1) - 1) + n * (n-1) * (2(n-2) - 1) + \dots + n! \\
&< 2 * n + 2 * n * (n-1) + 2 * n * (n-1) * (n-2) + \dots + 2 * n! + n! \\
&= 2(n + n * (n-1) + \dots + \frac{n!}{2}) + 3 * n! \\
&< 2 * (\frac{n!}{(n-1)!} + \frac{n!}{(n-2)!} + \dots + \frac{n!}{2!}) + 3 * n!
\end{aligned}$$

נשים לב כי: $n! \leq 2 * (\frac{n!}{(n-1)!} + \frac{n!}{(n-2)!} + \dots + \frac{n!}{2!})$
ולכן:

$$\begin{aligned}
T(n) &= n * T(n-1) + 2 * n - 1 \\
&< 2 * (\frac{n!}{(n-1)!} + \frac{n!}{(n-2)!} + \dots + \frac{n!}{2!}) + 3 * n! \\
&\leq 2 * n! + 3 * n! \\
&= 5 * n! \\
&= o(n!)
\end{aligned}$$