# Chapter 13 / **Example 8**
# Finding the parameter from a Poisson distribution

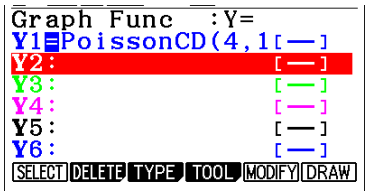
The random variable $T$ is modelled by a Poisson distribution. Given that $P(T > 3) = 0.53$, find the variance of $T$.

$T \sim Po(\lambda)$. Find $P(T > 3) = P(T \geq 4)$.

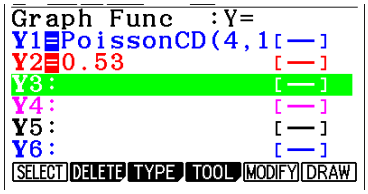
Press MENU 5 GRAPH to display the equation entry screen.

Press OPTN F6 ▷ F3 STAT F1 DIST F6 ▷ F1 POISSON F2 Pcd.

Type 4, 100, x, close the parentheses and press EXE to enter the equation as Y1.




Type 0.53 and press EXE to enter the second equation as Y2.

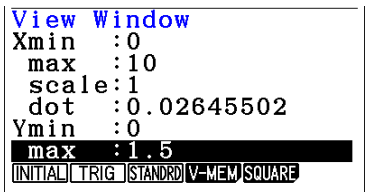



Press SHIFT F3 V-WIN.

Set the axes to show $0 \leq x \leq 10$ with a scale of 1 and $0 \leq y \leq 1.5$ with a scale of 0.1.

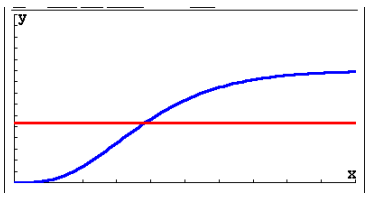
You can leave the other items as they are.

Press EXIT when you have finished.




Press F6 DRAW to display the graph screen.

The GDC now displays the graphs in a suitable window.




To find the intersection press F5 G-Solv F5 Intersect.

Press EXE to display the coordinates.

The GDC displays the intersection of the curve and the line at the point $(3.82, 0.53)$

Hence $\lambda = 3.82$.

Variance = 3.82.