

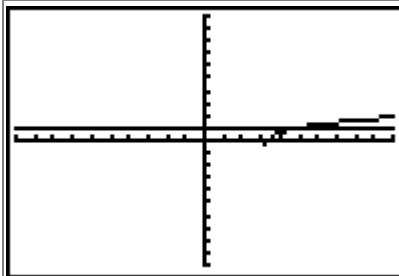
Solving Logarithmic Equations Graphically using the Intersection of Graphs Method

Example: Solve $\log(x) + \log(x - 3) = 1$

```

Plot1 Plot2 Plot3
\Y1=log(X)+log(X
-3)
\Y2=1
\Y3=
\Y4=
\Y5=
\Y6=
    
```

STEP 1: Enter one side of the equation under Y_1 and the other side of the equation under Y_2 .
Let $Y_1 = \log(x) + \log(x - 3)$ and $Y_2 = 1$
Go to $Y =$ and enter both equations.



STEP 2: Then press **GRAPH**.

NOTE: To find the intersection, you have to see the point where the two graphs intersect. If you cannot see this point, then you will need to change the size of your viewing window.

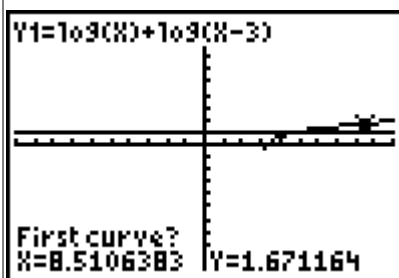
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CALCULATE
1:value
2:zero
3:minimum
4:maximum
5:intersect
6:dy/dx
7:∫f(x)dx
    
```

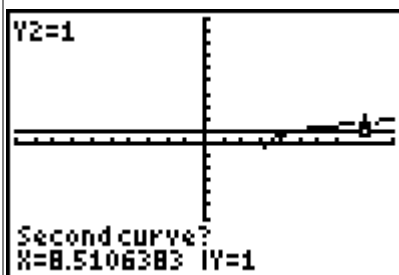
STEP 3: The solution to the equation will be the point where the two graphs intersect.

To find this point of intersection, press **2nd** **TRACE** which is the **CALCULATE** menu.
Arrow down to 5: intersect.

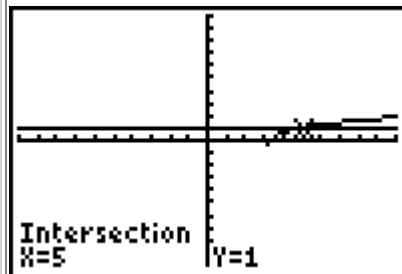
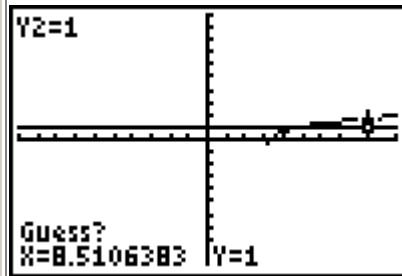
Then press **ENTER**.



STEP 4: The calculator asks for the first curve. Use the arrow keys to move the cursor so it is on one of the graphs (it does not matter which one).



Then press **ENTER**.



The cursor should jump to the other graph. If it does not, use the arrow keys to move it to the other graph.

Then press .

Press again for the guess.

The calculator will then find the point where the two graphs intersect.

Since you are solving the equation for x , you just want the x -coordinate of the point.

The solution to this equation would be

$$x = 5$$