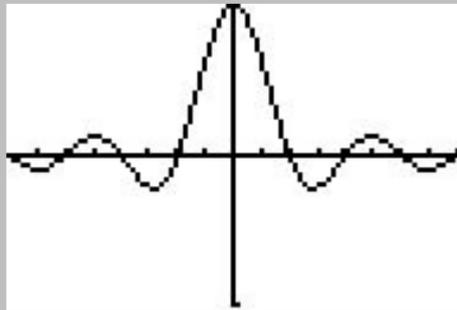


Graphics Calculators

Multiple Choice

Numerical methods make almost any multiple choice problem trivial to solve.



- 1 Solve the nonlinear equation: $\log(x) = 0.805 \sin(x)$
- A. $x = 0.5$
 - B. $x = 1.2$
 - C. $x = 2.6$
 - D. $x = 3.4$

- 1 Solve the nonlinear equation: $\log(x) = 0.805 \sin(x)$
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 - C. $x = 2.6$
 - D. $x = 3.4$

Now push the **Y=** button and set $\backslash Y_1 =$ to the left side of the equation and set $\backslash Y_2 =$ to the right side of the equation.

```
Plot1 Plot2 Plot3
\Y1=log(X)
\Y2=.805sin(X)
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

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\Y1=log(X)
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\Y4=
\Y5=
\Y6=
\Y7=
```

```
TABLE SETUP
TblStart=
ΔTbl=1
Indent: Auto ASK
Depend: Auto ASK
```

Push the **TBLSET** button (**2nd WINDOW**), move the cursor over **Indpnt:** **ASK** option and press **ENTER**.

- 1 Solve the nonlinear equation: $\log(x) = 0.805 \sin(x)$
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```

```

TABLE SETUP
TblStart=
ΔTbl=1
Indent: Auto
Depend: Auto Ask

```

X	Y ₁	Y ₂
.5	-.301	.38594
1.2	.07918	.75029
2.6	.41497	.41498
3.4	.53148	-.2057

X=

Push the **TBLSET** button (**2nd WINDOW**), move the cursor over **Indpnt:** **ASK** option and press **ENTER**.

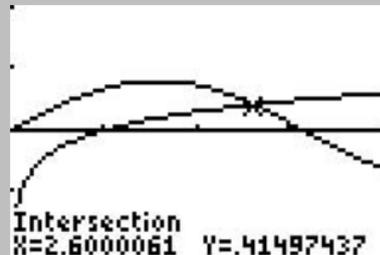
Now pres the **TABLE** button (**2nd GRAPH**) and enter the x values one at a time. When the value for **Y₁** equals the value for **Y₂**, you have found the answer.

Graphic Solution

Using the previous setup, set the **WINDOW** parameters and push the **GRAPH** button.

```
Plot1 Plot2 Plot3
Y1=log(X)
Y2=.805sin(X)
Y3=
Y4=
Y5=
Y6=
Y7=
```

```
WINDOW
Xmin=0.1
Xmax=4
Xscl=1
Ymin=-2
Ymax=2
Yscl=1
Xres=1
```



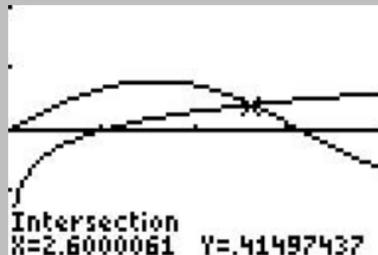
The intersection of the two lines is where the left side equals the right side.

Graphic Solution

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```
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\Y1=log(X)
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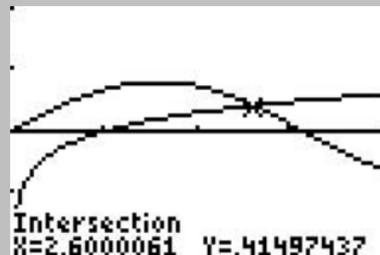
One can use the calculator to find the intersection by hitting **CALC 5** (**intersect**) and basically hitting **ENTER** several times. Actually you are selecting which lines to intersect and specifying a search region. The default values are generally good enough.

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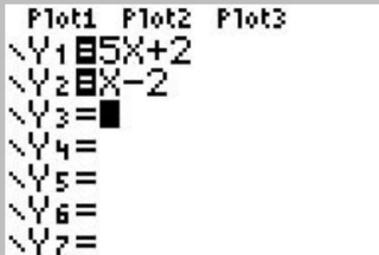
Graphic solutions can only be used for problems which have one unknown variable and a known range and domain.

Practice Problem

- 2 Solve the linear equation: $5x + 2 = x - 2$
- A. $x = -1$
 - B. $x = 0$
 - C. $x = 4/6$
 - D. $x = 1$

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$Y_2 = X - 2$		
$Y_3 =$		
$Y_4 =$		
$Y_5 =$		
$Y_6 =$		
$Y_7 =$		

X	Y ₁	Y ₂
-1	-3	-3
0	2	-2
.66667	5.33333	-1.333
1	7	-1

X =

Practice Problem

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