

Algebra II

The 7 Methods

Guess :

In this method you cover the variable part of the equation and ask what needs to hold this place to make the sentence True. In:

$10 + \frac{2}{3}t = 6$ we cover the $\frac{2}{3}t$ part and look at $10 + \underline{\quad} = 6$. This means that we

need $\underline{\quad}$ to be - 4. This means that $\frac{2}{3}t = -4$. Repeating the process we need

to ask what number is needed in the following sentence: $\frac{2}{3} * \frac{3 * \underline{\quad}}{1} = -4$. So

we need a - 2 to get the - 4. So $t = - 2 * 3$ or - 6.

Solver :

Press $\left[\text{MATH} \right]$ and move up or down (\uparrow \downarrow) to get to the 0:Solver... option on the MATH Menu. Press $\left[\text{ENTER} \right]$ to select and if the area is not clear, press $\left[\text{CLEAR} \right]$ to get a starting place.

```

MATH NUM CPX PRB
1: ▸Frac
2: ▸Dec
3: 3
4: 3√(
5: *√
6: fMin(
7: ↓fMax(
    
```

```

MATH NUM CPX PRB
4: 3√(
5: *√
6: fMin(
7: fMax(
8: nDeriv(
9: fnInt(
0: Solver...
    
```

```

L*W-A=0
L=5
W=7
A=11
bound={-1E99,1...
    
```

```

EQUATION SOLVER
eqn: 0=
    
```

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For the sentence: $-27 = 12w + 27$ we key in

```
EQUATION SOLVER
eqn: 0=(-27)-(12w
+27)
```

using parentheses for each side of the equation. Place a guess on the line for the variable. Then press **f** [SOLVE] to get the answer. Look for the bullet and don't forget to round.

```
(-27)-(12w+27)=0
w=7
bound=(-1E99,1...
```

```
(-27)-(12w+27)=0
▪ w=-4.5
bound=(-1E99,1...
▪ left-rt=0
```

Graph Intersect:

Press **o** and place the left side of the sentence on Y_1 and the right side on Y_2 . Using Bubble Baby and Dolciani [**q** ,] Look for the place where the two lines cross (intersect). You might have to adjust the Window to see the intersection. For this sentence $0.7(5a - 1.2) = 2a - 0.39$ we replace the a with x and key in the following:

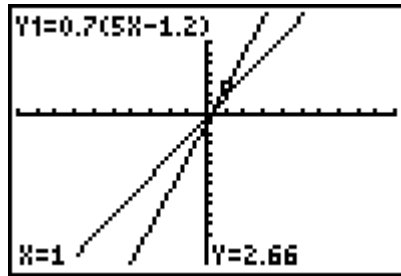
```
Plot1 Plot2 Plot3
0Y1=0.7(5X-1.2)
0Y2=2X-0.39
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

```
MEMORY
1:ZBox
2:Zoom In
3:Zoom Out
4:ZDecimal
5:ZSquare
6:ZStandard
7↓ZTrig
```

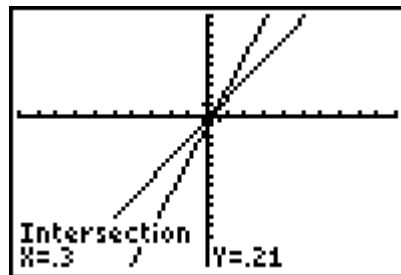
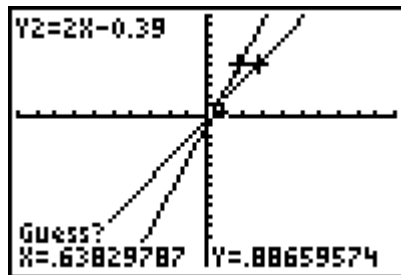
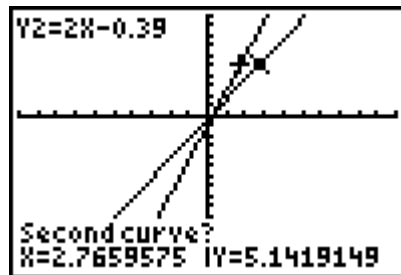
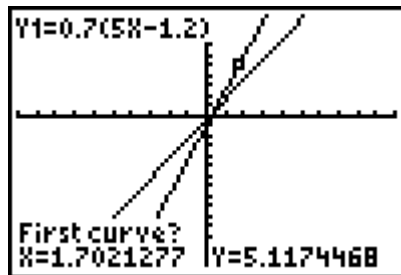
If you can **r** and then guess the location, do that, but if you can't, press **y** [CALC] and find the actual intersection.

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



Substitution/Logic:

In this method, just place a value in for the variable and then key in the sentence using a colon to separate the two commands. Keep trying until you get the Truth (1). For $78 = 22 - 8t$ we have:

9→T:78=22-8T

5→T:78=22-8T	0
-5→T:78=22-8T	0
-7→T:78=22-8T	0
█	1

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Table:

Start this method like the Intersection, but then you will set up your Table as shown below. Press **y** [TBLSET] and then **y** [TABLE] to see the Table. For the sentence $4y - 21 = 9y - 16$ we have:

<pre> Plot1 Plot2 Plot3 →Y1 4X-21 →Y2 9X-16 \Y3= \Y4= \Y5= \Y6= \Y7= </pre>	<pre> TABLE SETUP TblStart=-10 ΔTbl=1 Indent: Auto Ask Depend: Auto Ask </pre>
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Looking for the value of x that makes the two functions equal, we have:

<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr><th>X</th><th>Y1</th><th>Y2</th></tr> </thead> <tbody> <tr><td>-10</td><td>-61</td><td>-106</td></tr> <tr><td>-9</td><td>-57</td><td>-97</td></tr> <tr><td>-8</td><td>-53</td><td>-88</td></tr> <tr><td>-7</td><td>-49</td><td>-79</td></tr> <tr><td>-6</td><td>-45</td><td>-70</td></tr> <tr><td>-5</td><td>-41</td><td>-61</td></tr> <tr><td>-4</td><td>-37</td><td>-52</td></tr> </tbody> </table> <p>X = -10</p>	X	Y1	Y2	-10	-61	-106	-9	-57	-97	-8	-53	-88	-7	-49	-79	-6	-45	-70	-5	-41	-61	-4	-37	-52	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr><th>X</th><th>Y1</th><th>Y2</th></tr> </thead> <tbody> <tr><td>-7</td><td>-49</td><td>-79</td></tr> <tr><td>-6</td><td>-45</td><td>-70</td></tr> <tr><td>-5</td><td>-41</td><td>-61</td></tr> <tr><td>-4</td><td>-37</td><td>-52</td></tr> <tr><td>-3</td><td>-33</td><td>-43</td></tr> <tr><td>-2</td><td>-29</td><td>-34</td></tr> <tr><td>-1</td><td>-25</td><td>-25</td></tr> </tbody> </table> <p>X = -1</p>	X	Y1	Y2	-7	-49	-79	-6	-45	-70	-5	-41	-61	-4	-37	-52	-3	-33	-43	-2	-29	-34	-1	-25	-25
X	Y1	Y2																																															
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-1	-25	-25																																															

By Hand:

For the following sentence we will just do the traditional algebraic manipulation trying to get the variable isolated with a coefficient of 1.

$$5x - 7 = x + 9$$

$$5x - 7 - x = x + 9 - x$$

$$4x - 7 = 9$$

$$4x - 7 + 7 = 9 + 7$$

$$4x = 16$$

$$\frac{4x}{4} = \frac{16}{4}$$

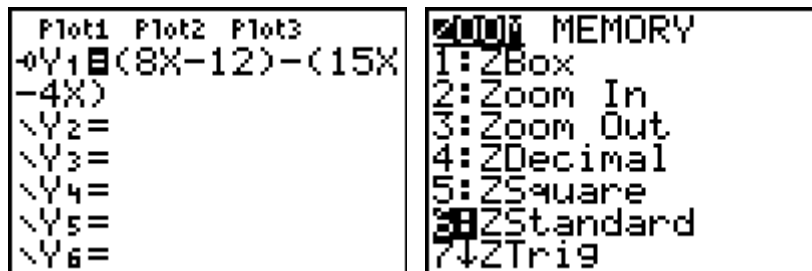
$$x = 4$$

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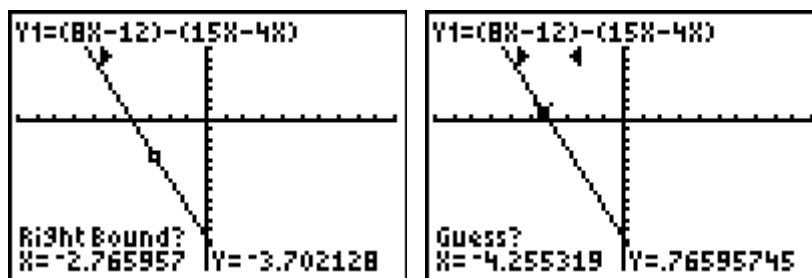
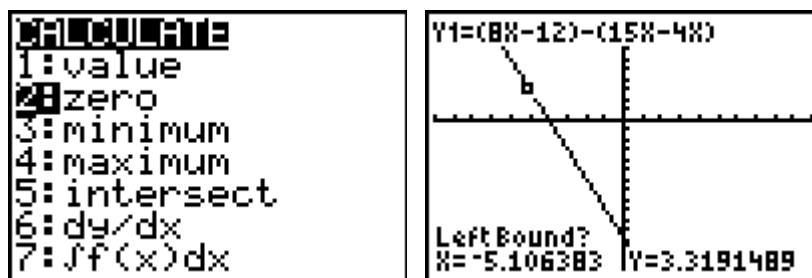
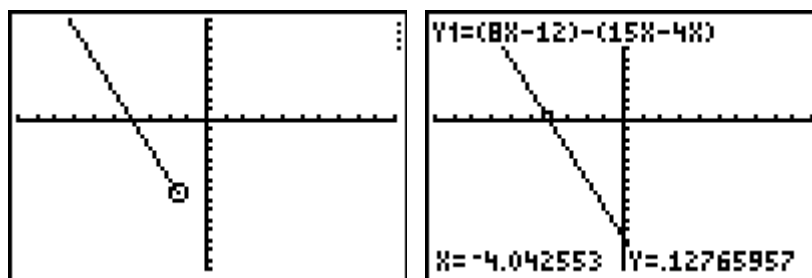
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Zero:

This starts like Solver but on the **0** editor. For $8x - 12 = 15x - 4x$ we have:



We are looking for the place where the line crosses the x-axis (where $y = 0$). You can trace and guess the value, or use the Zero option off of the CALCULATE Menu (Press **y** [CALC] **0**).



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