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 in needed in the following sentence: $\frac{2}{3} * \frac{3*}{1} = -4$. So

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

Solver:

Press   and move up or down (} ↑) to get to the 0:Solver… option on the MATH Menu. Press ˊ   to select and if the area is not clear, press }
ˊ   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={-1ε99,1…
```

```
EQUATION SOLVER
eqn:0=
```

Algebra II
The 7 Methods

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 ƒ   [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:
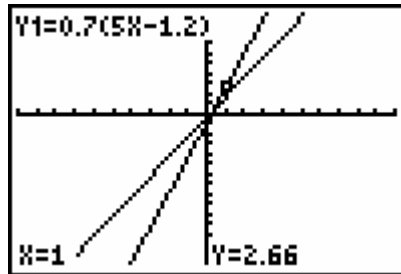
```
Plot1 Plot2 Plot3
•\Y1■0.7(5X-1.2)
•\Y2■2X-0.39
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

```
ZOOM 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.
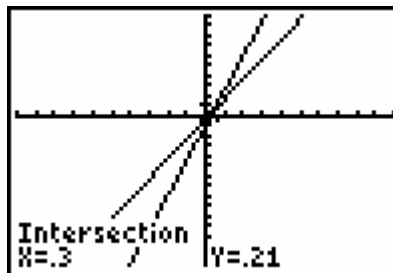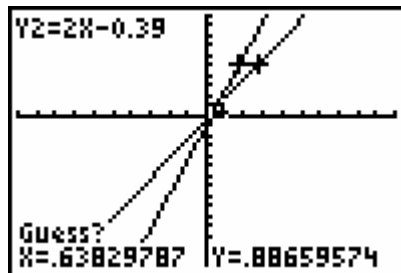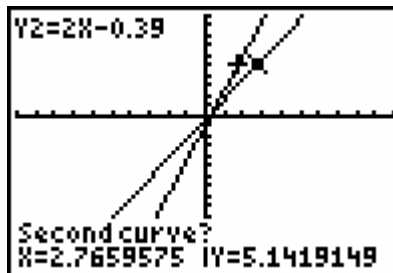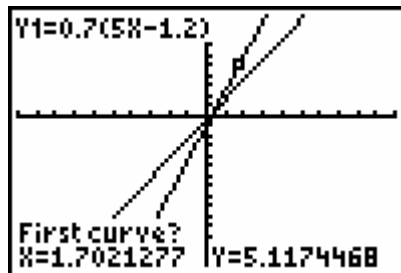
Algebra II
The 7 Methods

```
Y1=0.7(5X-1.2)          CALCULATE
                        1:value
                        2:zero
                        3:minimum
                        4:maximum
                        5:intersect
                        6:dy/dx
X=1          Y=2.66     7:∫f(x)dx
```

```
Y1=0.7(5X-1.2)          Y2=2X-0.39



First curve?            Second curve?
X=1.7021277 Y=5.1174468 X=2.7659575 Y=5.1419149
```

```
Y2=2X-0.39



Guess?                  Intersection
X=.63829787 Y=.88659574 X=.3        Y=.21
```

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
```

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

Algebra II
The 7 Methods

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:

```
 Plot1 Plot2 Plot3      TABLE SETUP
\Y1■4X-21                TblStart=-10
\Y2■9X-16                ΔTbl=1
\Y3=                    Indpnt: Auto Ask
\Y4=                    Depend: Auto Ask
\Y5=
\Y6=
\Y7=
```

Looking for the value of x that makes the two functions equal, we have:

```
 X   │ Y1  │ Y2          X   │ Y1  │ Y2
-10  │ -61 │ -106       -7  │ -49 │ -79
-9   │ -57 │ -97        -6  │ -45 │ -70
-8   │ -53 │ -88        -5  │ -41 │ -61
-7   │ -49 │ -79        -4  │ -37 │ -52
-6   │ -45 │ -70        -3  │ -33 │ -43
-5   │ -41 │ -61        -2  │ -29 │ -34
-4   │ -37 │ -52        -1  │ -25 │ -25
X=-10                   X=-1
```

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.

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

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

$$4x - 7 = 9$$

$$4x - 7 + 7 = 9 + 7$$
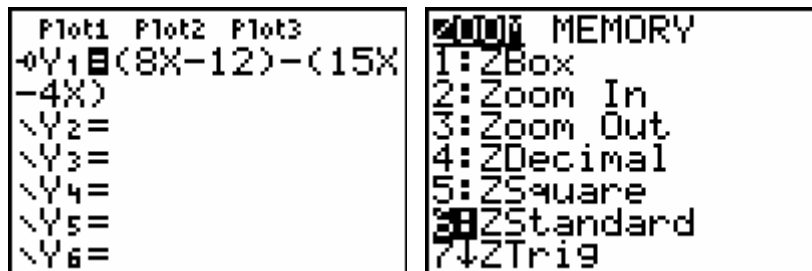
$$4x = 16$$

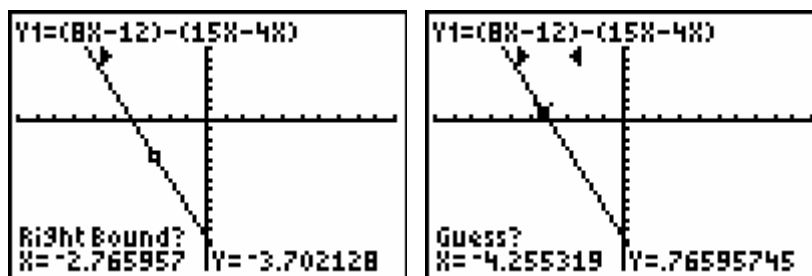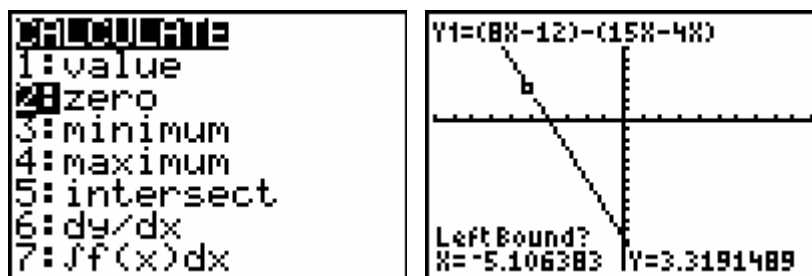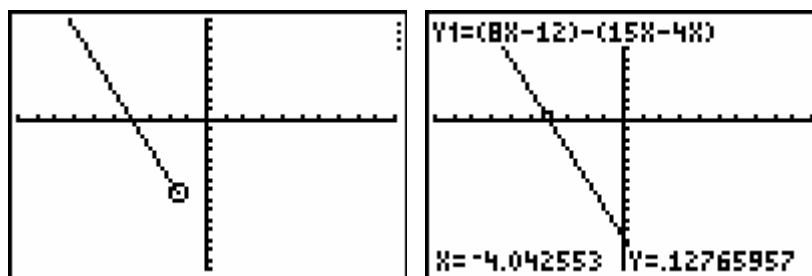$$\frac{4x}{4} = \frac{16}{4}$$

$$x = 4$$

Algebra II
The 7 Methods

Zero:

This starts like Solver but on the o editor. For 8x – 12 = 15x – 4x we have:

```
 Plot1  Plot2  Plot3      ZOOM  MEMORY
◦Y₁◻(8X-12)-(15X      1:ZBox
 -4X)                 2:Zoom In
\Y₂=                  3:Zoom Out
\Y₃=                  4:ZDecimal
\Y₄=                  5:ZSquare
\Y₅=                  6◼ZStandard
\Y₆=                  7↓ZTrig
```

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
CALCLATE Menu (Press y   [CALC] Á).

```
                      Y1=(8X-12)-(15X-4X)



                      X=-4.042553  Y=.12765957
```

```
CALCULATE             Y1=(8X-12)-(15X-4X)
1:value
2◼zero
3:minimum
4:maximum
5:intersect           Left Bound?
6:dy/dx               X=-5.10638₃  Y=3.3191489
7:∫f(x)dx
```

```
Y1=(8X-12)-(15X-4X)    Y1=(8X-12)-(15X-4X)




Right Bound?          Guess?
X=-2.765957 Y=-3.702128   X=-4.255319 Y=.76595745
```

Algebra II
The 7 Methods