

Find the Point of Intersection on a TI Graphing Calculator

In this example we'll find the solution to the system of equations

$$-22x + 202y = 2020$$

$$-50x + 101y = 1403.9$$

by finding where the graphs of the equations intersect. To facilitate graphing each equation, solve each equation for y to yield

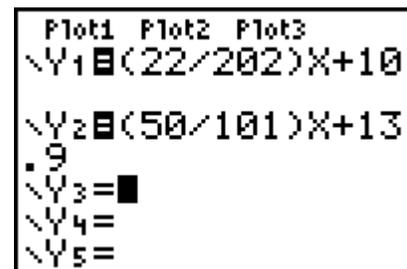
$$y = \frac{22}{202}x + 10$$

$$y = \frac{50}{101}x + 13.9$$

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Enter the Equations

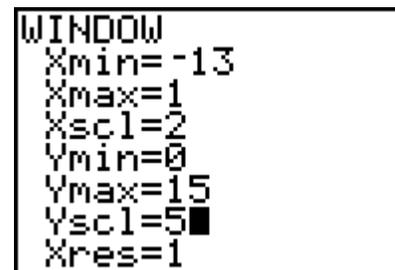
1. Use the $\boxed{Y=}$ key to enter the first equation in the system as $Y_1 = (22/202)X + 10$ and the second equation in the system as $Y_2 = (50/101)X + 13.9$. The parentheses help to distinguish the fractions in each equation.



Plot1 Plot2 Plot3
Y1=(22/202)X+10
Y2=(50/101)X+13.9
Y3=
Y4=
Y5=

Set the Window

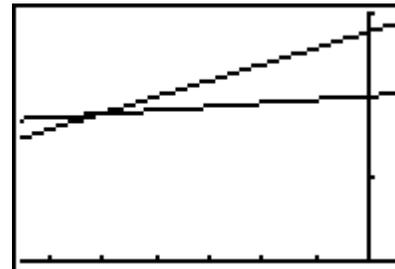
2. Use the $\boxed{\text{WINDOW}}$ key to set the window as shown.
3. Set Xscl=2 and Yscl=5 to put tic marks every 2 units on the x axis and every 5 units on the y axis.



WINDOW
Xmin=-13
Xmax=1
Xscl=2
Ymin=0
Ymax=15
Yscl=5
Xres=1

Graph the equations

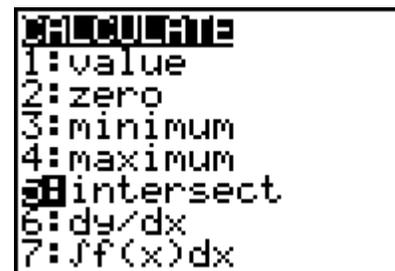
4. Press the $\boxed{\text{GRAPH}}$ key to see the graphs.



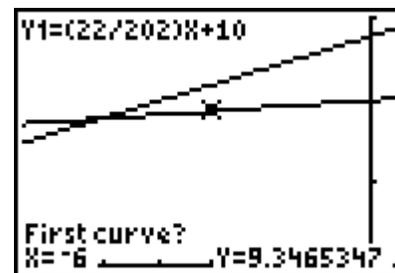
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Find the coordinates of the Intersection point

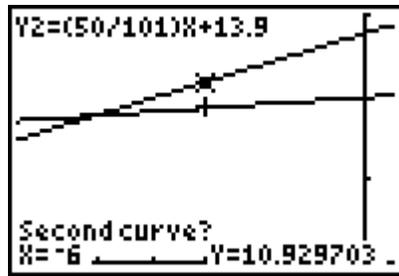
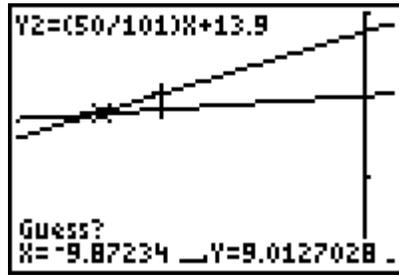
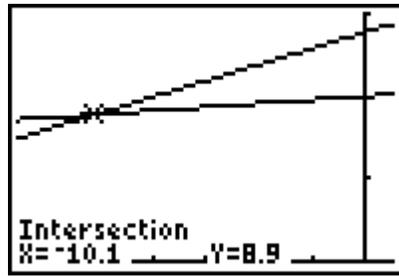
5. Press $\boxed{2nd}$ \boxed{TRACE} to access CALC. A CALCULATE screen appears.
6. Press the $\boxed{5}$ key or cursor down to 5:intersect and press \boxed{ENTER} .
7. You are brought back to the graph screen.



8. You must select a *First curve* to tell the calculator which of the lines you want to use for the intersection. Although there are only two lines on the screen, selecting the curve to intersect is useful when there are more than two graphs on the screen. Press \boxed{ENTER} .



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<p>9. Next you must select a <i>Second curve</i> to tell the calculator which second curve to use for the intersection. Use the up or down arrow key to move to the other line. Press ENTER.</p>	 <p>Y2=(50/101)X+13.9 Second curve? X=-6 Y=10.929703</p>
<p>10. Next, you must enter a <i>Guess</i>. You can enter a value or you can just press ENTER.</p>	 <p>Y2=(50/101)X+13.9 Guess? X=-9.87234 Y=9.0127028</p>
<p>11. Finally, press ENTER to see the coordinates of the <i>Intersection</i> at the bottom of the screen. The intersection is at approximately $(x, y) = (-10.1, 8.9)$.</p>	 <p>Y2=(50/101)X+13.9 Intersection X=-10.1 Y=8.9</p>