

TI Technology Guide for Paying college tuition

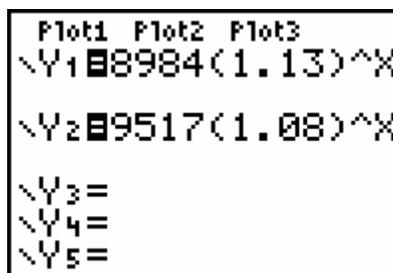
TI-83 Plus and TI-84 Plus Families

Displaying a Graph, Finding the Zero of a Function, Creating Input/Output Table ,Using Evaluating a Function, Equation Solver, , and Finding a Point of Intersection.

Displaying a Graph
Activity 1

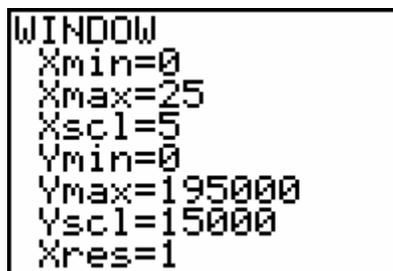
Texas A&M data for in-state expense was used for the first exponential equation, $y=8984(1.13)^x$, and the average cost for in-state was used for the second exponential equation, $y=9517(1.08)^x$.

Press $\boxed{Y=}$ and enter both exponential equations listed above in the Y=Editor. If the Y= Editor is not empty, press $\boxed{\text{CLEAR}}$. If there are additional entries press $\boxed{\text{CLEAR}}$ until all are clear. Notice that the = by Y1 and Y2 is highlighted which means it will graph. Pressing $\boxed{\text{ENTER}}$ when the cursor is on this highlighted area will act as a toggle to turn on or off one or both of the graphs.



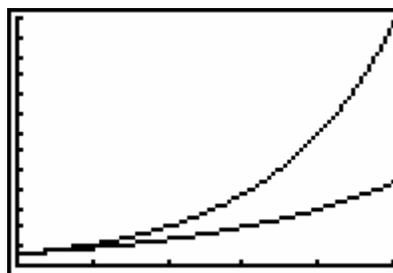
```
Plot1 Plot2 Plot3
\Y1=8984(1.13)^X
\Y2=9517(1.08)^X
\Y3=
\Y4=
\Y5=
```

Press $\boxed{\text{WINDOW}}$ and make the follow changes.



```
WINDOW
Xmin=0
Xmax=25
Xscl=5
Ymin=0
Ymax=195000
Yscl=15000
Xres=1
```

Press $\boxed{\text{GRAPH}}$

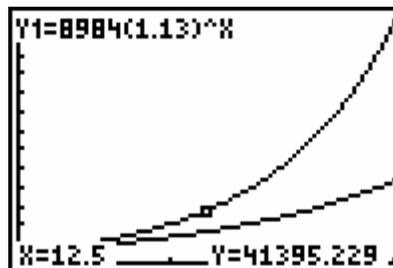


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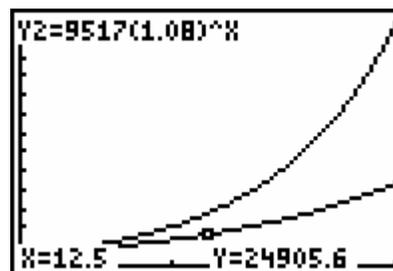
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Finding the zero of a function

Press $\boxed{\text{TRACE}}$ and use the left and right arrow keys to explore the graph for an x-intercept.



Press $\boxed{\uparrow}$ or $\boxed{\downarrow}$ to move to the other exponential equation and repeat the procedure above. Look at the upper left-hand corner of the screen to determine which graph, Y1 or Y2, that you are tracing.



Creating Input/Output Table

Another way to look for the x-intercept is to create a table of values. To access this feature, press $\boxed{2\text{nd}}\boxed{\text{TBLSET}}$. The TABLE SETUP screen will appear. The TblStart indicates the starting x value in the table and ΔTbl indicates the change in the x values for the table. Make the following settings in the TABLE SETUP and press $\boxed{2\text{nd}}\boxed{\text{TABLE}}$ to show the table with corresponding values for year and college costs.

TABLE SETUP	
TblStart=0	
$\Delta\text{Tbl}=5$	
IndFmt: $\boxed{\text{AUTO}}$	Ask
Depend: $\boxed{\text{AUTO}}$	Ask

Scrolling with the $\boxed{\uparrow}$ or $\boxed{\downarrow}$ keys reveals the behavior of the cost for each exponential equation.

X	Y1	Y2
0	8984	9517
5	16552	13984
10	30497	20546
15	56188	30190
20	103523	44358
25	190735	65177
30	351417	95766

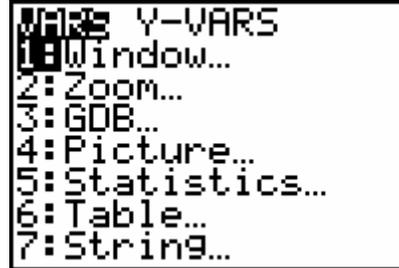
X=0

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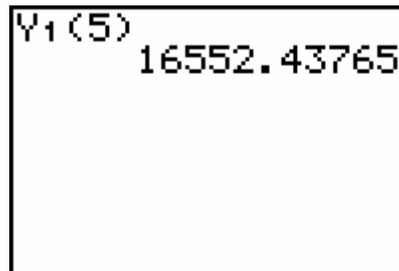
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Evaluating a Function

The predicted tuition and fees for your freshman year, which we will use five years, can be calculated by evaluating the exponential equation for a specific number of years. In this case we will evaluate the exponential equation after 5 years to represent the expense for the freshman year. Press **[VARS]**, **[▶]**, **[ENTER]**, **[ENTER]**.



Enter the following **[1]**, **[5]**, **[▶]** and press **[ENTER]**.

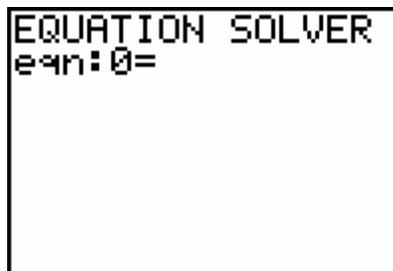


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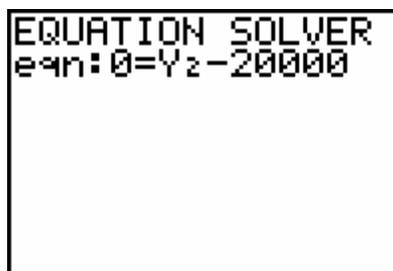
Using Equation Solver

To access the solver, press **MATH** and select 0:Solver. The solver places all variables and numbers on one side of the equal sign always equal to zero. If you do not see $equ:0=$ as shown, press **▲** and then press **CLEAR** to erase the existing equation.



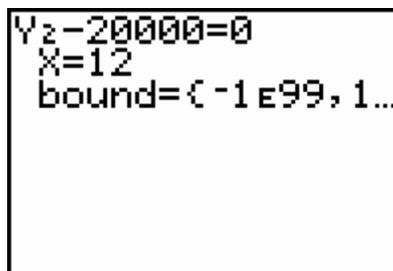
EQUATION SOLVER
equ:0=

After the = enter $Y_2-20000$



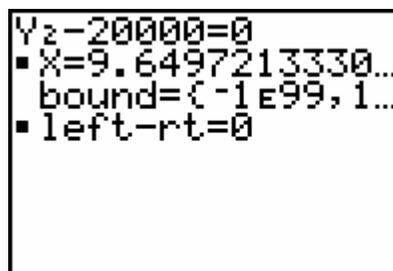
EQUATION SOLVER
equ:0=Y₂-20000

The value found on your calculator for X may be different from the value shown in the screen shot. Since there is only one x-intercept for this graph you do not need to change the value for X. Press **ENTER**



Y₂-20000=0
X=12
bound=(-1E99, 1...

The cursor should be on the number by the X = and then press **ALPHA**[SOLVE] to find the solution.



Y₂-20000=0
▪ X=9.6497213330...
bound=(-1E99, 1...
▪ left-rt=0

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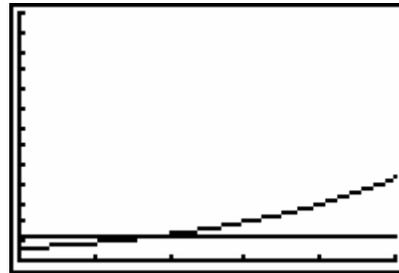
Finding a Point of Intersection

Another way to solve this problem is to enter 20000 in the Y= register as shown at the right. Move the cursor over the = by Y1 and press enter to deselect this equation. You will only determine the time for the average cost equation.

```

Plot1 Plot2 Plot3
\Y1=8984(1.13)^X
\Y2=9517(1.08)^X
\Y3=20000
\Y4=
\Y5=
    
```

Press **GRAPH** and find the intersection of the two graphs.



Press **2nd**[CALC], 5:intersect, **ENTER**, **ENTER**, **ENTER**. The following three screen shots will explain what you will see when finding the intersection between graphs.

```

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

This screen means that the cursor is on one of the two graphs.

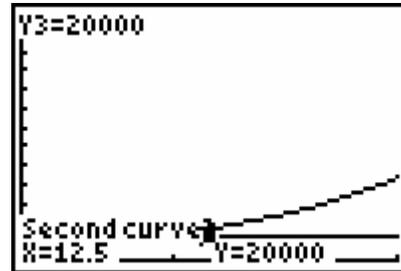
```

Y2=9517(1.08)^X
First curve? 1
X=12.5 Y=24905.6
    
```

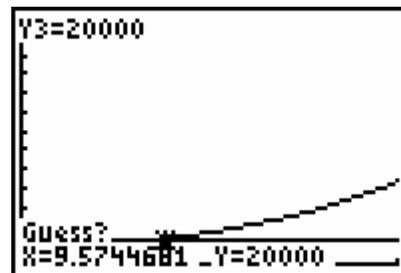
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The next screen is showing that the cursor now is on the second graph.



Since there are only two curves graphed you do not need to move closer to the intersection. Pressing **ENTER** for the third time will lead to the intersection between the two graphs.



The answer to the problem is found at the bottom of the screen.

