

Decreasing the Window ClassicView

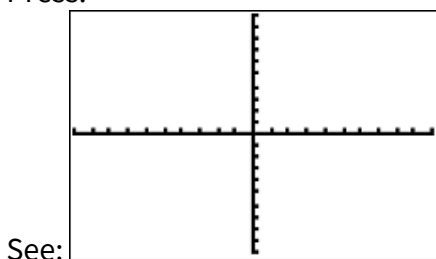
Objectives:

- Using Zoom In to decrease the window
- Understand some limitations of using the zoom menu
- Decreasing the window using Window settings

Using Zoom In to decrease the window

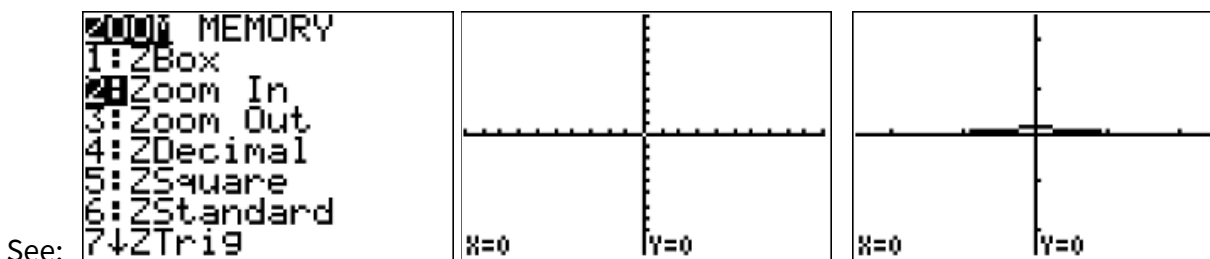
Example 1: Graph $y = \frac{\sqrt{1-x^2}}{8}$ in the standard window, then Zoom Out centered at (0,0).

Press:



Divide by 8 is small, so perhaps Zoom In might help. To select Zoom In, press:

To re-draw the graphing using (0,0) as the center of the new window, just press



Understand some limitations of using the zoom menu

CAUTION: When using Zoom choices 1-4, the calculator waits the user to indicate the new center of the graph before it re-draws.

IMPORTANT: The cursor's location when you press ENTER will be the new center of the graph.

Note: To use a different center, move the cursor using

CAUTION: Using zoom IN or OUT is often confusing, because

- it shrinks (enlarges) both the x-axis and the y-axis by the same amount
- the amount it shrinks (enlarges) has nothing to do with the equation in the Y= menu

Example 1 (continued): What window did ZOOM IN give?



To see the new window settings, press:

```
WINDOW
Xmin=-2.5
Xmax=2.5
Xscl=1
Ymin=-2.5
Ymax=2.5
Yscl=1
↓Xres=1
```

See:

The window decreased the same in both x and y directions, from $[-10,10] \times [-10,10]$ to $[-2.5,2.5] \times [-2.5,2.5]$.

Decreasing the window using Window settings

PRO TIP: The Zoom In result from Example 1 isn't good, but it shows information we can use.

The graph is visible, so $X_{\min} = -2.5$ and $X_{\max} = 2.5$ might work.

On the y-axis, it appears we don't need Quadrants III and IV, but we need a smaller Ymax.

Example 2: Graph $y = \frac{\sqrt{1-x^2}}{8}$ in a more appropriate window using WINDOW settings.

IMPORTANT: There is not one right answer! Window choice is partly personal taste.

From Example 1, the x-axis might be $-2.5 \leq x \leq 2.5$, but we need a larger Ymin and smaller Ymax.

Use the value at $x = 0$ to adjust Ymax.

To set up and see a table starting at 0, press:

tblset f2 catalog L1 Y entry solve entry solve then press 2nd graph and

2nd window 0 enter 1 enter enter

TABLE SETUP
TblStart=0
ΔTbl=1
Indent: Auto Ask
Depend: Auto Ask

X	Y1
0	.125
1	0
2	ERROR
3	ERROR
4	ERROR
5	ERROR
6	ERROR

Press + for X=-2

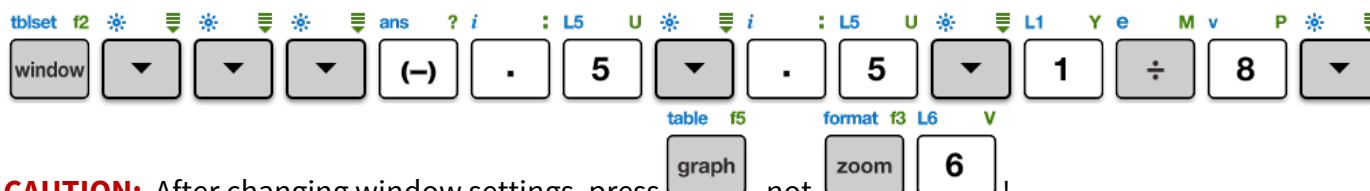
The largest y-value is 0.125, yet this function is not defined for x-values less than -2.5 or greater than 2.5!

REMEMBER: Xmin must be less than Xmax, and Ymin must be less than Ymax. Check the negatives!

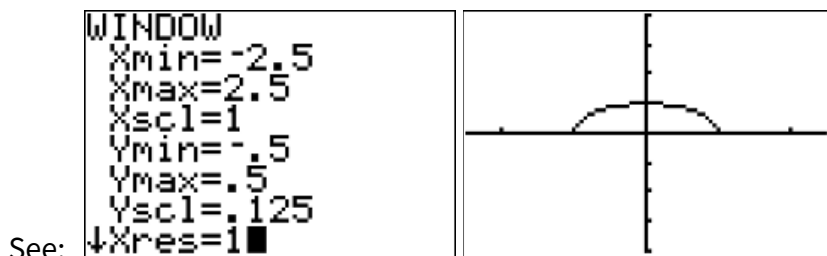
PRO TIP: When changing window settings, notice whether your calculator automatically erases all of the



old value when you type a new value into the window screen. If it doesn't, press first.

To leave Xmin, Xmax and Xscl unchanged, but set Ymin=-0.5, Ymax=0.5, Yscl=1/8, press:



PRO TIP: The calculator divides 1/8 to get 0.125!



PRO TIP: Either  or  will move down the WINDOW screen.

Try It!

Graph in an appropriate window.

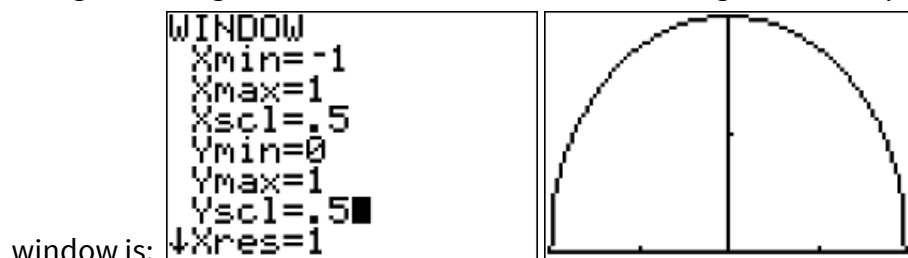
1) $y = \sqrt{1-x^2}$

2) $y = \frac{1}{\sqrt{1+x^2}}$

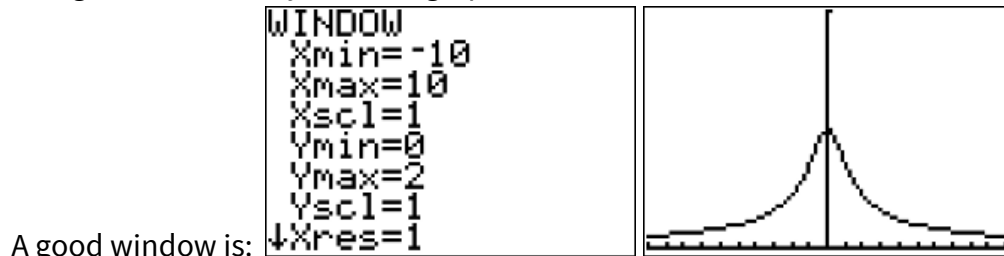
3) $y = \frac{1}{5x}$

Answer Hints

1) Using zoom IN gives distortion near the x-axis, making it look like $y(1)$ is not defined when it is! A good



2) Using zoom IN is okay, but this graph is defined for all values of x , so it's better to shrink only the y-axis.



3) Use Zoom IN. Don't forget the parentheses!

