Graphing Calculators

Using a Graphing Calculator to Find Local Minima and Maxima

To find the exact value at which a function f has a local maximum or local minimum usually requires calculus. However, a graphing calculator may be used to approximate these values.

1. Press $\boxed{Y =}$ and enter function.
2. Press $\boxed{\text{GRAPH.}}$
3. Enter the domain and range (to fit your graph) by pressing $\boxed{\text{WINDOW}}$.
Xmin = smallest # (left value) , Xmax = largest # (right value), Xscl=# (how you are counting your tick marks on the x-axis), Ymin = smallest # (bottom value), Ymax = largest # (top value), Yscl=# (how you are counting your tick marks on the y-axis)
4. Press $\boxed{\text{GRAPH}}$.
5. Press $\boxed{\text{2ND}}$ $\boxed{\text{TRACE}}$ (CALC) and choose 3: minimum or 4: maximum, enter.
6. Move the arrows (use only left and right arrows, not up or down arrows) until you are left of the minimum or maximum and press $\boxed{\text{ENTER}}$.
7. Move the arrows until you are right of the minimum or maximum and press $\boxed{\text{ENTER}}$.
8. Press $\boxed{\text{ENTER}}$.
9. The Y= ___ on the bottom right gives the minimum or maximum.

To find intercepts it is basically the same but chose zeros or intercepts on step 5. On step 9 the X= will give you your intercept. To find the y-intercept go to table by pushing $\boxed{\text{2ND}}$ $\boxed{\text{GRAPH}}$. Find the y-value when x = 0.

Frequently Used Buttons

If the wording above the button is blue, push **2nd** first.

If the wording above the button is green, push **alpha** first.

For the variable x push **X,T,θ,n**

To go back to the home screen push **2nd** **mode**

The negative **(−)** and subtract **−** are different buttons and look different when typed on the screen.

NORMAL FLOAT
-6−6

To retype something, push **2nd** **enter**

On a TI-84 to make fractions **alpha** **y=** push

To get cube root, $\sqrt[3]{\ (}$, push **math** and this screen should open.

```
NORMAL FLOAT AUTO REAL RADIAN MP
MATH NUM CMPLX PROB FRAC
1:▶Frac
2:▶Dec
3:³
4:³√(
5:ˣ√
6:fMin(
7:fMax(
8:nDeriv(
9↓fnInt(
```

To get absolute value, abs(, push **math** then arrow right to NUM to get this screen.

```
NORMAL FLOAT AUTO REAL RADIAN MP
MATH NUM CMPLX PROB FRAC
1:abs(
2:round(
3:iPart(
4:fPart(
5:int(
6:min(
7:max(
8:lcm(
9↓gcd(
```

If the calculator puts the beginning parentheses, be sure to put the end parentheses!

If you can't find something, go to catalog **2nd** **0**

To get a table of values push **2nd** **graph**