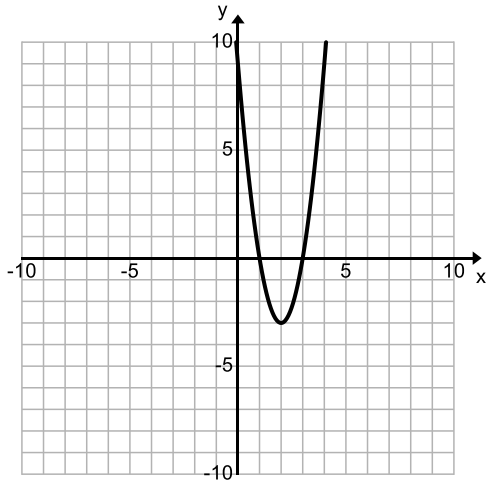
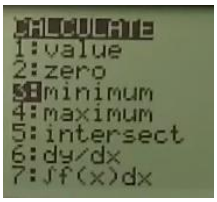
Calculator Skills: Minimum and Zeros

1. Given: $y = 3x^2 - 12x + 9$



- We want to graph this function on a X:[-10,10,1] Y:[-10,10,1] Window
- Make sure all the other functions are cleared out of **[y=]** and enter the given function.
- **Graph** the function. Does the function fit your window; can you see the important parts of the function: zeros, minimum point.

a) Steps to find the minimum point.



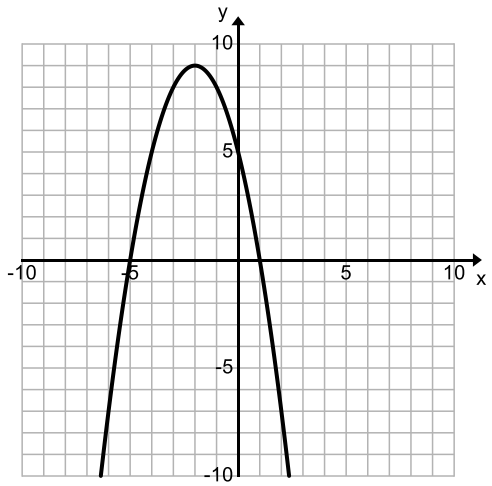
i. CALC (2^{nd} TRACE)
ii. Go to 3: minimum
iii. Look at your graph and predict the x-value for the minimum.
   - Enter an x-value for a number Left of your prediction (less than the predicted x-value).
   - Enter an x-value for a number Right of your prediction (larger than the predicted x-value).
   - Guess? No need to guess; Hit ENTER. Your calculator shows the x and y value for your Vertex. The y – value is the minimum of the function.

b) Find the zeros.

i. CALC (2^{nd} TRACE)
ii. Go to 2: zero
iii. Look at your graph and predict the smallest of the two x-values for the zeros.
   - Enter an x-value for a number Left of your first prediction (less than the predicted x-value).
   - Enter an x-value for a number Right of your first prediction (larger than the predicted x-value).
   - Guess? No need to guess; Hit ENTER. Your calculator shows the x and y value for your Zero. The y – value is zero and the x-value is what we are looking for.
iv. Look at your graph and predict the largest of the two x-values for the zeros. Repeat the enter an x – value to the Left and an x – value to the Right; Guess.

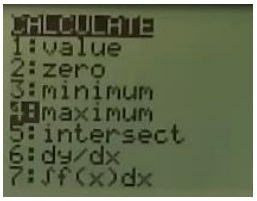
Calculator Skills: Maximum and Zeros

2. Given: $y = -x^2 - 4x + 5$



- We want to graph this function on a X:[-10,10,1] Y:[-10,10,1] Window
- Make sure all the other functions are cleared out of **[y=]** and enter the given function.
- **Graph** the function. Does the function fit your window; can you see the important parts of the function: zeros, maximum point.

a) Steps to find the maximum point.



i. CALC (2^{nd} TRACE)
ii. Go to 4: maximum
iii. Look at your graph and predict the x-value for the maximum.
   - Enter an x-value for a number Left of your prediction (less than the predicted x-value).
   - Enter an x-value for a number Right of your prediction (larger than the predicted x-value).
   - Guess? No need to guess; Hit ENTER. Your calculator shows the x and y value for your Vertex. The y – value is the maximum of the function.

b) Find the zeros.

i. CALC (2^{nd} TRACE)
ii. Go to 2: zero
iii. Look at your graph and predict the smallest of the two x-values for the zeros.
   - Enter the x-value for a number Left of your first prediction (less than the predicted x-value).
   - Enter the x-value for a number Right of your first prediction (larger than the predicted x-value).
   - Guess? No need to guess; Hit ENTER. Your calculator shows the x and y value for your Zero. The y – value is zero. The x-value is what we are looking for.
iv. Look at your graph and predict the largest of the two x-values for the zeros. Repeat the enter an x – value to the Left and an x – value to the Right; Guess.