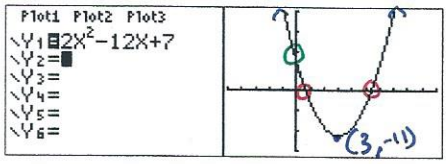
Your graphing calculator will simplify the process of graphing and solving quadratic functions, especially when the function doesn't have perfect whole values for zeros or the vertex.

EXAMPLES: Find the x and y intercepts & the max/min, domain/range, using a graphing calculator.

f(x) = $2x^2 - 12x + 7$



y-Intercept: (0,7)
Standard Form "c" {Vertex Form Let x=0 and simplify

x-Intercepts/zeros/roots: (.65,0) (5.35,0)

Vertex(min/max): (3,-11)

Domain: $(-\infty,\infty)$ (x) Range: $(-11,\infty)$ (y)

For all y= quadratics, the DOMAIN WILL ALWAYS BE $(-\infty,\infty)$

f(x) = $-1.5x^2 + 13x - 5$

2nd Trace
CALCULATE
2: ZERO (Finds zeros)
3: Minimum (Finds vertex)
4: Maximum (Finds vertex)

y-Intercept: (0,-5)

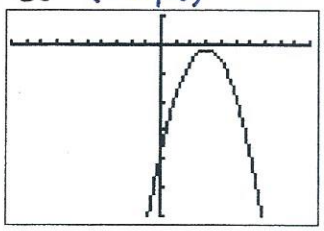
x-Intercepts/zeros/roots: (.40,0) (8.26,0)

Vertex(min/max): (4.33, 23.17)
"a" is negative, opens down!

Domain: $(-\infty,\infty)$ Range: $(-\infty, 23.17)$

Zoom
6: Standard
2: Zoom IN
3: Zoom OUT

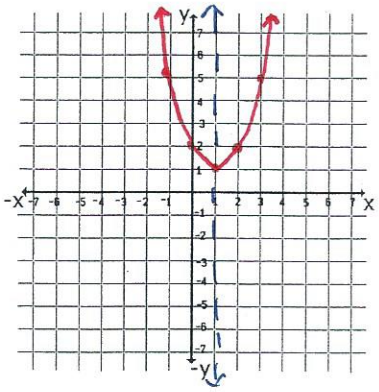
Domain / Range goes from smallest # to largest #.



What if your graph looks like this? It is a maximum, it does not have any REAL zeros/solutions/roots, it has imaginary/complex. Does not cross/touch x-axis!
$(\pm i)$ $(a \pm bi)$

EXAMPLES: Find the domain/range & solutions(zeros) of the following functions by graphing them.

(a) $f(x) = x^2 - 2x + 2$



Domain: $(-\infty,\infty)$

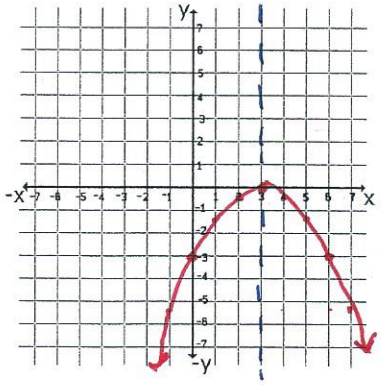
Range: $(1,\infty)$

Solutions: NO REAL SOLUTIONS, 2 complex/imaginary.

Vertex: (1,1)

y-int: (0,2)

(b) $f(x) = -\frac{1}{3}x^2 + 2x - 3$



Domain: $(-\infty,\infty)$

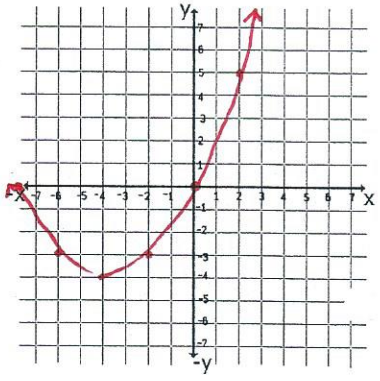
Range: $(-\infty,0)$

Solutions: (3,0)

Vertex: (3,0)

y-int: (0,-3)

(c) $f(x) = .25x^2 + 2x$



Domain: $(-\infty,\infty)$

Range: $(-4,\infty)$

Solutions: (-8,0) (0,0)

Vertex: (-4,-4)

y-int: (0,0)