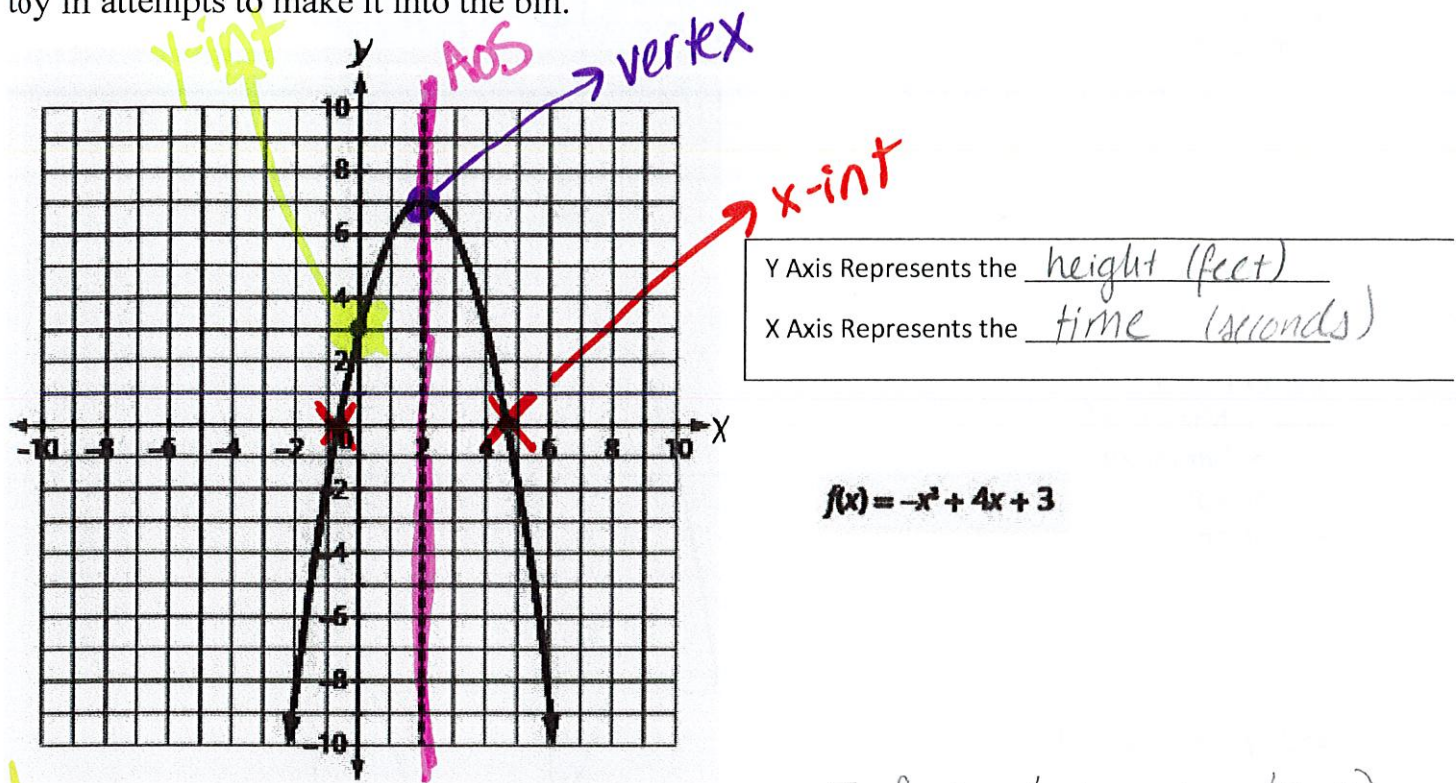


**Situation:** Kailyn is trying to return her toy to the toy bin, but feeling lazy. She throws the toy in attempts to make it into the bin.



- d 1. Where is Kailyn throwing from? Where did she start? 3 feet (where time/x=0)
- a 2. What is the highest point that the toy reaches? 7 feet
- b 3. When did the toy reach that highest point? 2 seconds
4. Where does the toy land? on the ground, we dont know horizontal
- c 5. How long did it take the toy to get there? ≈ 5 seconds

**Vocabulary** (Identify from graph above then Label parts on the graph)

- a. **Vertex:** Highest/Lowest point on graph
- b. **Axis of Symmetry:** Line cutting parabola in half
- c. **x-intercept:** Also known as zero, solution, root (where y=0)
- d. **y-intercept:** Starting point (where x=0)

**NOW** Match the letters under the vocabulary to the situation above.

# Practice

Ex1:  $y = x^2 + 4x + 3$

Vertex  $(-2, -1)$

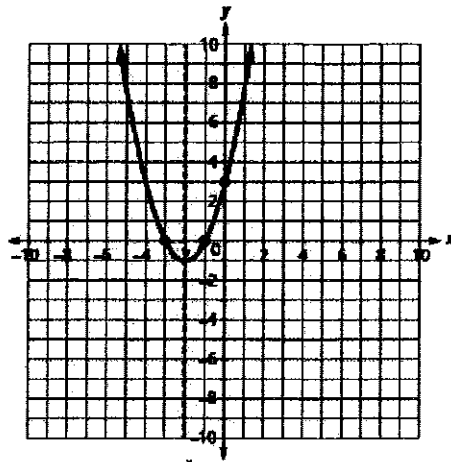
Max or Min? min

Axis of Symmetry  $x = -2$

y-intercept  $(0, 3)$

x-intercept(s)

$(-1, 0)$  ;  $(-3, 0)$



Ex2:  $y = -x^2 - 2x + 3$

Vertex  $(-1, 4)$

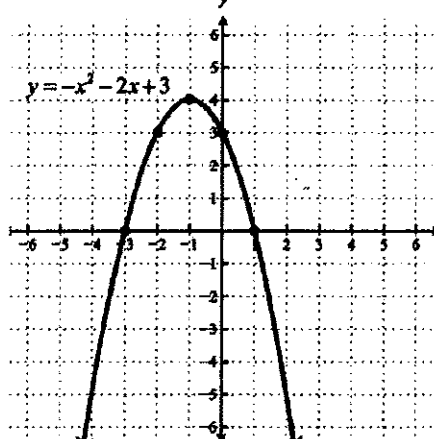
Max or Min? MAX

Axis of Symmetry  $x = -1$

y-intercept  $(0, 3)$

x-intercept(s)

$(-3, 0)$  ;  $(1, 0)$



Ex3:  $y = x^2 - 2x + 3$

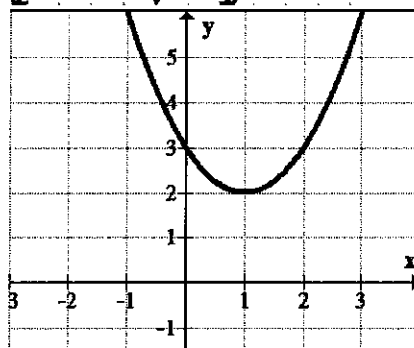
Vertex  $(1, 2)$

Max/Min min

Axis of Symmetry  $x = 1$

y-intercept  $(0, 3)$

x-intercept(s) none/no solution



Ex4:  $y = -x^2 + 4x$

Vertex  $(2, 4)$

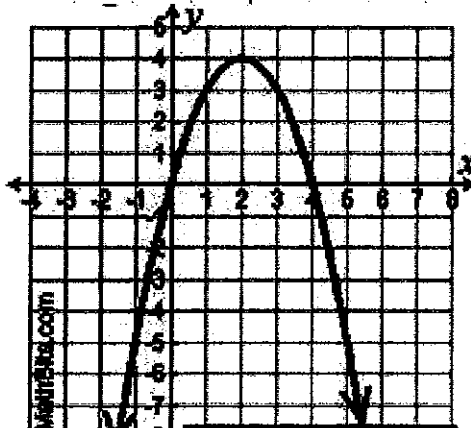
Max/Min max

Axis of Symmetry  $x = 2$

y-intercept  $(0, 0)$

x-intercept(s)

$(0, 0)$  ;  $(4, 0)$



## CONCLUSIONS:

1. Without looking at a graph, how could we identify the y-intercept from the equation?

It is the constant, the "c" value

2. How does the Axis of symmetry relate to the max/min?

It is the x-value of the vertex

3. How do you know if it's a max or min? a value: neg or pos?