Put It All Together

We have now explored transformations on many parent functions: polynomial, radical, exponential, and logarithmic functions. You have made observations about the general rules for transformations during these explorations. Now it is time to put them all together.

# Function Notation

*In general*, a function is referred to as . We can use this notation to represent any function—in fact, it is called ***function notation***. If we are going to make generalizations about functions, we can do it using .

# Observation I

|  |  |  |  |
| --- | --- | --- | --- |
| We have looked at: |  |  |  |
|  |  |  |  |

These are all examples of altering the *x* portion of the function. We could write this generally as  where *a* is how we are changing *x*.

What effect did this change have on the parent function in each case?

# Observation II

|  |  |  |  |
| --- | --- | --- | --- |
| Also, we looked at: |  |  |  |
|  |  |  |  |

What was changing here?

How might you write that in ***function notation***?

What effect did this change have on the parent function in each case?

# Observation III

|  |  |  |  |
| --- | --- | --- | --- |
| We also examined: |  |  |  |

What was changing here?

How might you write that in ***function notation***?

What effect did this change have on the parent function in each case?

# Observation IV

|  |  |  |  |
| --- | --- | --- | --- |
| Also, we examined: |  |  |  |

What was changing here? How did these differ from Observation III?

How might you write that in ***function notation***?

What effect did this change have on the parent function in each case?

# Prediction

How would the graph of  differ from the parent graph of ?