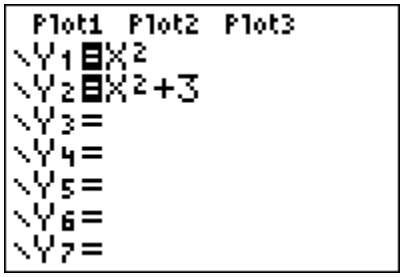
Name _____

Class _____

Problem 1 – f(x) → f(x) + C

Press [Y=] and enter $\mathbf{X^2}$ for Y_1 and $\mathbf{X^2 + 3}$ for Y_2 to match the screen at the right.

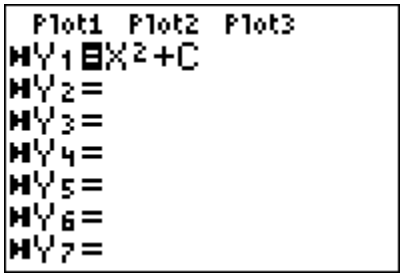


Press [2nd] [TABLE] and observe the differences between the values of Y_1 and Y_2. Experiment with other values besides 3.

1. How do the values in the Y_2 column compare to the values in the Y_1 column as you experiment with other values other than 3?

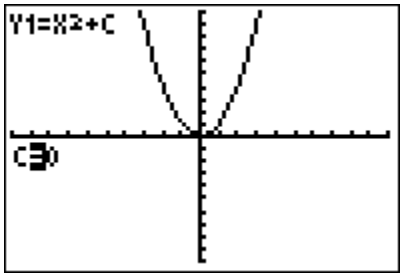
2. How do you think the graph will change for positive values used in Y_2? Negative values?

To test your conjecture, start the Transformational Graphing application by pressing [APPS] and select **Transfrm.**



Now, press [Y=] and enter $\mathbf{X^2 + C}$ to match the screen at the right.

Press [ZOOM] and select **ZStandard** to get the graph displayed in a normal window. Notice that the variable *C* is listed to the left along with the equation.



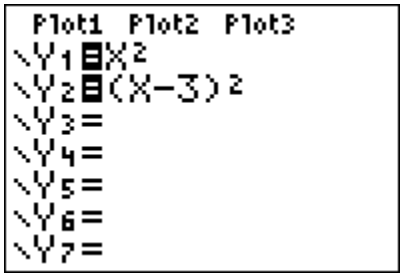
Experiment with different values of *C* as well as with different functions such as $\mathbf{X^3}$ and $\mathbf{X^4}$.

When you are done experimenting, exit the Transformational Graphing Application by pressing [APPS], selecting **Transfrm** and choosing **uninstall**.

3. How does the graph change for positive values of *C*? Negative values of *C*?

Problem 2 – f(x) → f(x–B)

Press [Y=] and enter $\mathbf{X^2}$ for Y1 and $\mathbf{(X–3)^2}$ for Y2 to match the screen at the right.



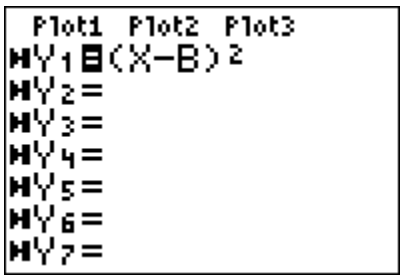
Press [2nd] [TABLE] and observe the differences between the values of Y1 and Y2. Experiment with other values besides 3.

4. How do the values in the Y2 column compare to the values in the Y1 column as you experiment with other values other than 3?

5. How do you think the graph will change for positive values used in Y2? Negative values?

Start the Transformational Graphing application.

Press [Y=] and enter $\mathbf{(X–B)^2}$ to match the screen at the right.

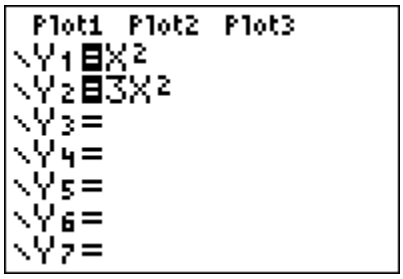


Press [GRAPH]. Experiment with different values of *B* as well as with different functions such as $\mathbf{X^3}$ and $\mathbf{X^4}$.

6. How does the graph change for positive values of *B*? Negative values of *B*?

Problem 3 – f(x) → A*f(x)

Press [Y=] and enter $\mathbf{X^2}$ for Y1 and $\mathbf{3X^2}$ for Y2 to match the screen to the right.



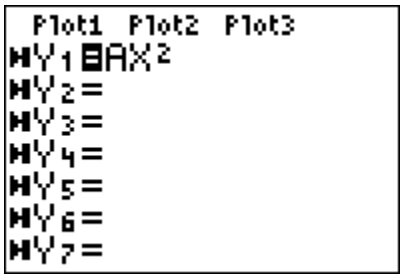
Press [2nd] [TABLE] and observe the differences between the values of Y1 and Y2. Experiment with other values besides 3.

7. How do the values in the Y2 column compare to the values in the Y2 column as you experiment with other values other than 3?

8. How do you think the graph will change for positive values used in Y2? Negative values?

Start the Transformational Graphing application.

Press [Y=] and enter **AX²** to match the screen at the right.

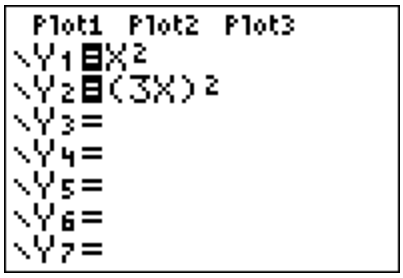


Press [GRAPH]. Experiment with different values of *A* as well as with different functions such as **X³** and **X⁴**.

9. How does the graph change for positive values of *A*? Negative values of *A*?

Problem 4 – f(a*x)

Press [Y=] and enter **X²** for Y1 and **(3X)²** for Y2 to match the screen to the right.



Press [2nd] [TABLE] and observe the differences between the values of Y1 and Y2. Experiment with other values besides 3.

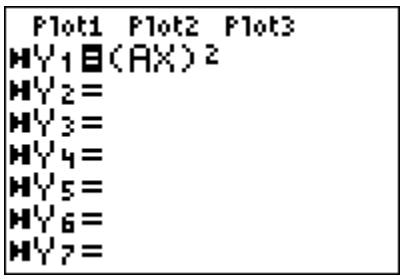
10. How do the values in the Y2 column compare to the values in the Y1 column as you experiment with other values other than 3?

11. How do you think the graph will change for positive values used in Y2? Negative values?

Start the Transformational Graphing application.

Press [Y=] and enter **(AX)^2** to match the screen at the right.

Press [GRAPH]. Experiment with different values of *A* as well as with different functions such as **X^3** and **X^4**.



12. How does the graph change for positive values of *A*? Negative values of *A*?

Problem 5

1. What kind of transformation is $f(x) = x^2 - 2$?

2. The function $f(x) = x^5$ will get closer to the *y*-axis under the transformation $p(x) \rightarrow a*p(x)$?

   ☐ True ☐ False

3. Describe the change in the graph from $f(x) = x^3$ for the function $f(x) = (x - 2)^3 + 3$?

4. Describe the transformation for $f(x) = x^4$ to $g(x) = 16x^4$.

5. Describe the transformation for $f(x) = x^3$ to $g(x) = x^3 + 3x^2 + 3x + 1$.

6. Write an equation for that transforms the graph of x^3 down 3 units and right 2 units.

7. Write an equation that reflects the graph of x^2 over the *x*-axis.