1.3 Transformations of Functions

This section is pure review of material from Grade 11. If you've forgotten certain aspects of the concepts, ask for help. Recall that there are three basic transformations of functions. You've probably heard of Flips, Stretches and Shifts. More formal mathematical terms would be Reflections, Dilations and Translations, respectively. Recall also that transformations can occur both vertically and horizontally.

Definition 1.3.1

Given a function $f(x)$, then we denote transformations to $f(x)$ as

$$a\,f(k(x-d))+c \quad \text{where}$$

a is the vertical Dilation. If $a<0$ then we also have a "vertical" reflection. (Reflect around the domain axis)

c is the vertical Translation

Horizontal => opposite

k the horizontal Dilation by factor $\frac{1}{k}$. If $k<0$ we have a "horizontal" reflection (reflect around the final axis)

d the horizontal Translation

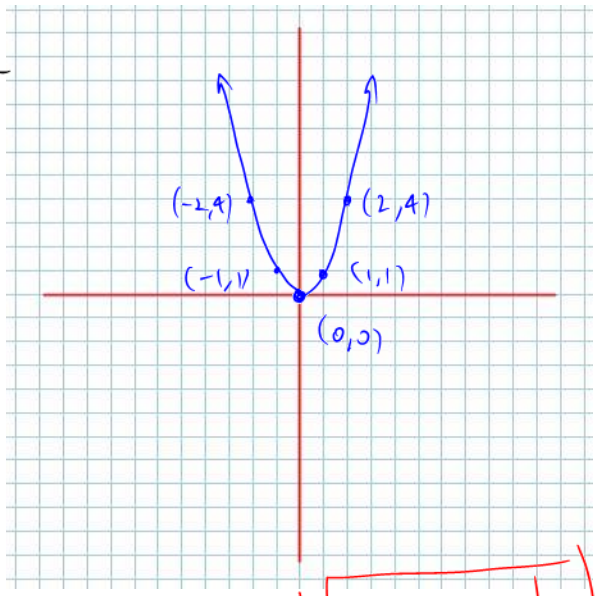
Class/Homework for Section 1.3

Complete the table on the Transformations Review Worksheet, and make sketches of all base and transformed functions. Hand in sketches for ~~six~~ three of the functions.

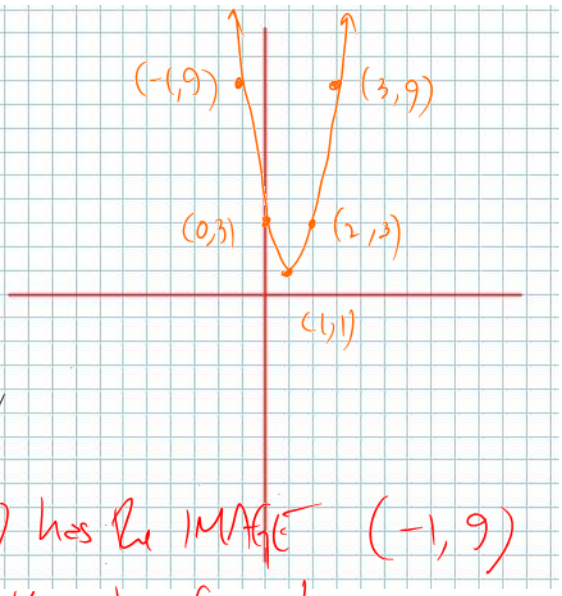
$f(x) = x^2$

Transformed $f(x) = 2(x-1)^2 + 1$

x	x^2
-2	4
-1	1
0	0
1	1
2	4

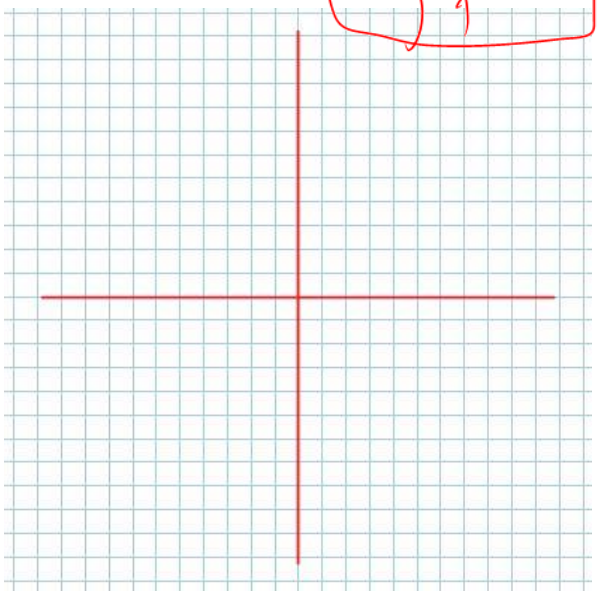


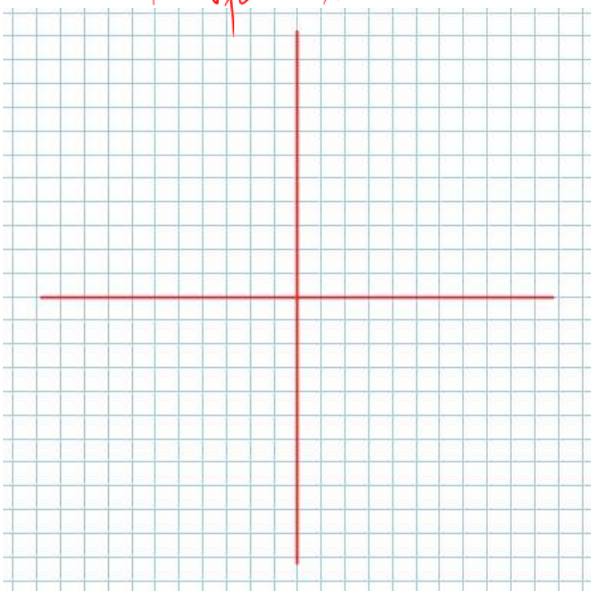
x_T	f_T
$x+1$	$2(\ )+1$
-1	9
0	3
1	1
2	3
3	9

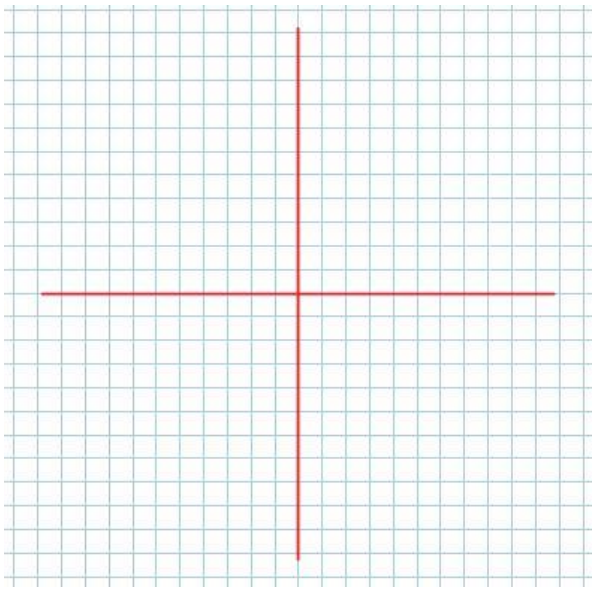


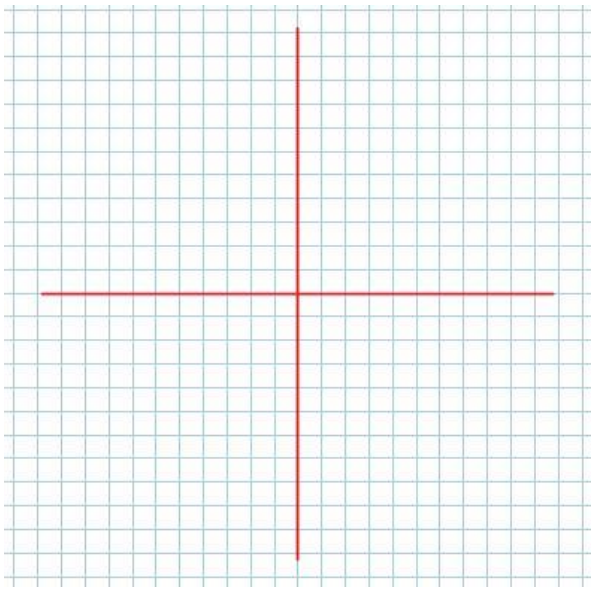
(-2,4) has the IMAGE (-1, 9)

We need image points under the transformations









Due Monday

Geoff -10 000