Transformation of AXES

For the graph of y=f(x) the following changes in x and y affect the graph according to the following table:

Replacing	Affects the graph by
1. X with x-h	shifts it h units horizontally
2. Y with y-k	shifts it k units vertically
3. X with ax	stretch/compress it by 1/a horizontally
4. Y with by	stretch/compress it by 1/b vertically
5. X with –x	reflects it about the y-axis
6. Y with –y	reflects it about the x-axis
7. X with y and y with x	reflects it about the line y=x

REMARKS: it is notable that if the function is unchanged

In case 5: it is said to be an even function

In case both 5 followed by 6 (or vice versa) it is said to be an odd function.

In case 7 the result is called the inverse of the original function.

Asymptotes:

1. If f(x)= $\frac{n(x)}{d(x)}$ is reduced to lowest terms, where n(x) and d(x) are polynomials, then d(x)=0 are vertical asymptotes.
   a. Also,(where k is the degree of the higher degree polynomial) if a and b are coefficients of the k^{th} degree terms of n(x) and d(x) respectively then $y = \frac{a}{b}$
2. For f(x)=b\ b^x for b>0
   a. The negative x-axis is an asymptote if b>1 and the positive x-axis is an asymptote if 0<b<1
   b. Also, for g(x)=f^{-1} (x)= log_b x for b>0
   c. The positive y-axis is an asymptote if b>1 and the negative y-axis is an asymptote if 0<b<1