**IB Pre HL Mixed Transformations**

**Transformation of given  to **

* **is a vertical dilation factor. (if , then the graph is reflected over x-axis)**
* **is a horizontal dilation factor. (, then the graph is reflected over x-axis)**
* **h is a horizontal translation unit.**
* **k is a vertical translation unit.**

Example 1) Given , describe the transformation to have 

Example 2) Write the **** which graph goes through the transformation , vertical stretch by a factor of 3, horizontal stretch by a factor of 5, and horizontal shift 3 units right, from ****

Example 3) Use the graph of the function 





Example 4) Sketch the graphs of the functions.

1. 

2. Write the equation for  in terms of .



