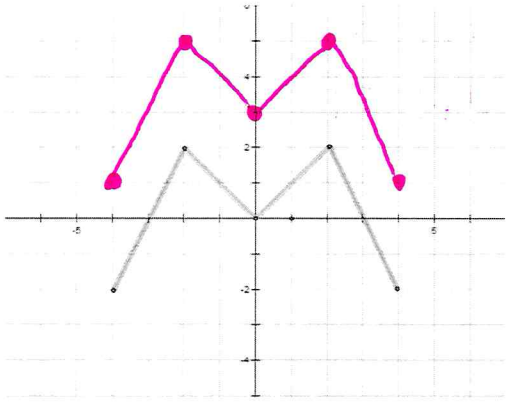
Name: Key Hour: _____ Date: _____

Transformations of Arbitrary Functions Notes

For each function: **a)** describe the transformation **b)** make a table of values to represent the new points after the transformations **c)** sketch the new graph.

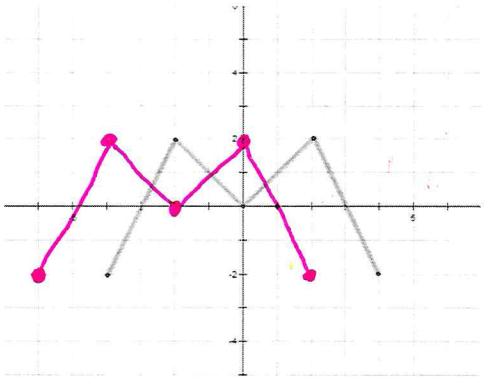
$F(x) \rightarrow f(x) + 3$ ($y + 3$) $\Leftarrow k \Rightarrow$ up 3 add 3 to each y value



X	Y
-4	-2
-2	2
0	0
2	2
4	-2

X	Y+3
-4	-2+3 = 1
-2	2+3 = 5
0	0+3 = 3
2	2+3 = 5
4	-2+3 = 1

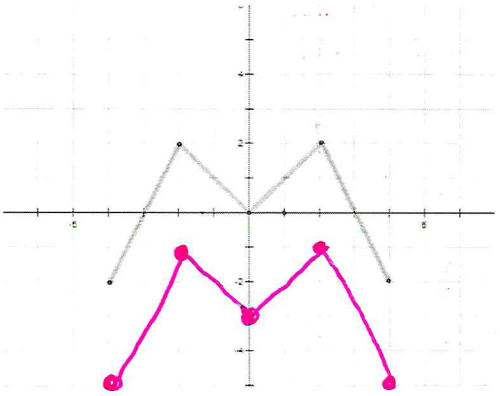
$f(x) \rightarrow f(x + 2)$ (opp) $\Leftarrow h = -2$ ~~left~~ 2 Sub. 2 from each X



X	Y
-4	-2
-2	2
0	0
2	2
4	-2

X-2	Y
-4-2 = -6	-2
-2-2 = -4	2
0-2 = -2	0
2-2 = 0	2
4-2 = 2	-2

$F(x) \rightarrow f(x) - 3$ down 3

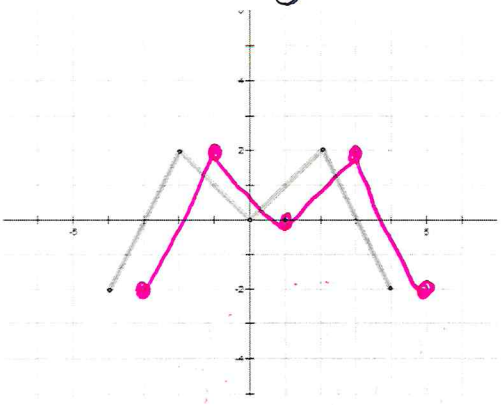


X	Y
-4	-2
-2	2
0	0
2	2
4	-2

X	Y-3
-4	-2-3 = -5
-2	2-3 = -1
0	0-3 = -3
2	2-3 = -1
4	-2-3 = -5

opp

$F(x) \rightarrow f(x-1)$ Right 1

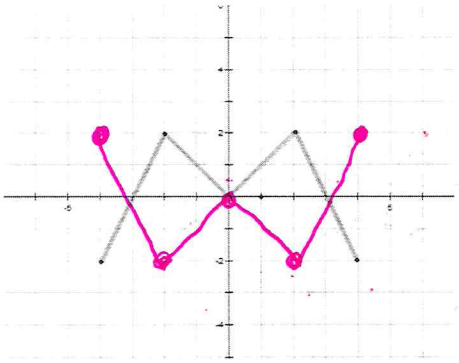


X	Y
-4	-2
-2	2
0	0
2	2
4	-2

X+1	Y
-4+1=-3	-2
-2+1=-1	2
0+1=1	0
2+1=3	2
4+1=5	-2

$-Y$

$F(x) \rightarrow -f(x)$ Reflects over the x-axis

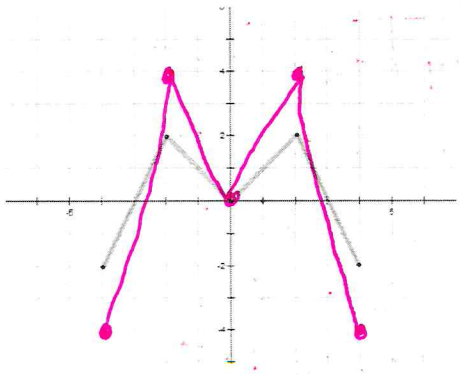


X	Y
-4	-2
-2	2
0	0
2	2
4	-2

X	-Y
-4	2
-2	-2
0	0
2	-2
4	2

$2 \cdot Y$

$F(x) \rightarrow 2f(x)$ Vertical stretch by 2



X	Y
-4	-2
-2	2
0	0
2	2
4	-2

X	2·Y
-4	-4
-2	4
0	0
2	4
4	-4