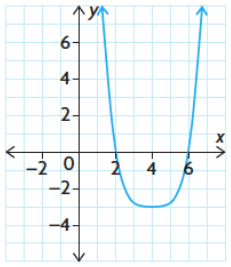
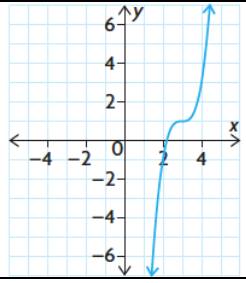
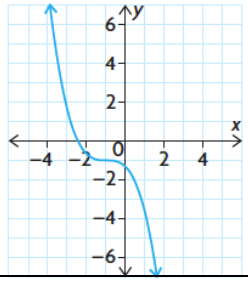
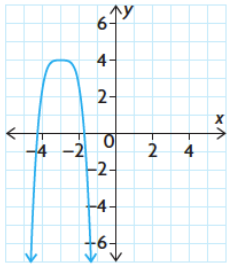
W4 – 1.4 – Transformations
MHF4U

1) Match each graph with the corresponding function.

A) $y = 2(x-3)^3 + 1$ **B)** $y = -\frac{1}{3}(x+1)^3 - 1$ **C)** $y = 0.2(x-4)^4 - 3$ **D)** $y = -1.5(x+3)^4 + 4$

2) List a good set of key points for the following parent functions:

$f(x) = x^2$	
x	y

$f(x) = x^3$	
x	y

$f(x) = x^4$	
x	y

$f(x) = x^5$	
x	y

3) Identify the a, k, d and c values and explain what transformation is occurring to the parent function:

a) $f(x) = -2(x-1)^2$

b) $g(x) = [-\frac{1}{3}(x+5)]^4 - 1$

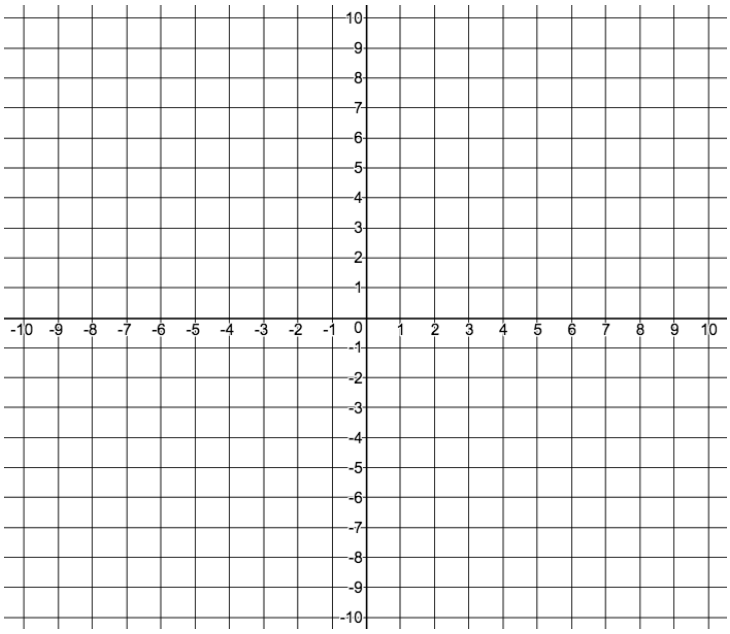
4) Write the full equation given the parent function and the transforming function:

a) $f(x) = x^5$, $g(x) = -3f[2(x+5)] - 1$

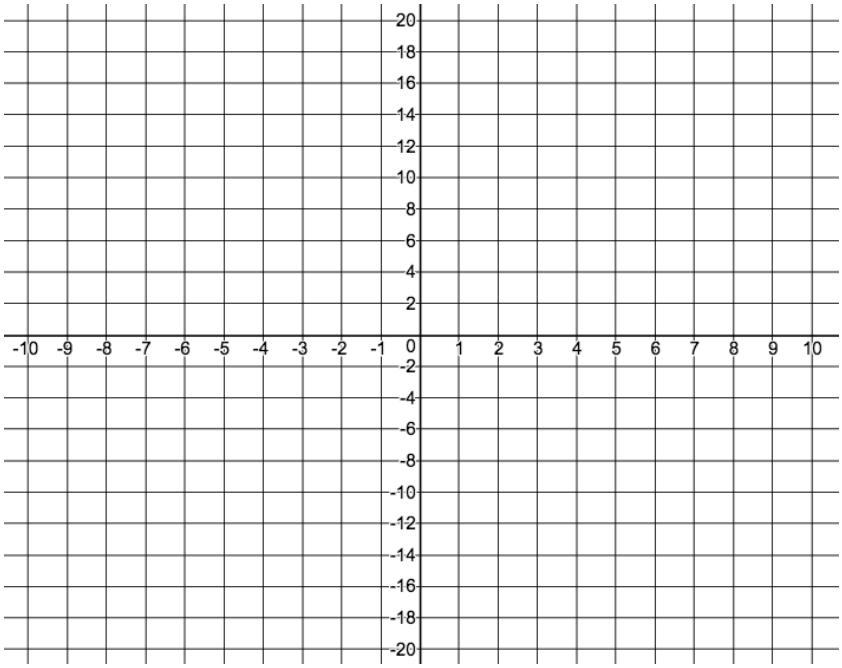
b) $f(x) = x^3$, $g(x) = \frac{1}{2}f\left[-\frac{1}{4}(x-4)\right] + 7$

5) For the following questions, use the key points of the parent function to perform transformations. Graph the parent and transformed function. Write the equation of the transformed function.

a) $f(x) = x^4$ $\quad g(x) = \frac{1}{2}f[-(x-5)] + 1$



b) $f(x) = x^3$ $\quad g(x) = -f[-2(x+1)] + 6$



6) Write an equation for the function that results from the given transformations.

a) The function $f(x) = x^4$ is translated 2 units to the left and 3 units up.

b) The function $f(x) = x^5$ is stretched horizontally by a factor of 5 and translated 12 units to the left.

c) The function $f(x) = x^4$ is stretched vertically by a factor of 3, reflected vertically in the x-axis, and translated 6 units down and 1 unit to the left.

d) The function $f(x) = x^6$ is reflected vertically in the x-axis, stretched horizontally by a factor of 5, reflected horizontally in the y-axis, and translated 3 units down and 1 unit to the right.