

MODULE 3**TRANSFORMATIONS OF GRAPHS
AND OPERATIONS ON FUNCTIONS**

Name: _____ Points: _____

Exercise 1. Sketch the graph of the function. Check your answer with the calculator.

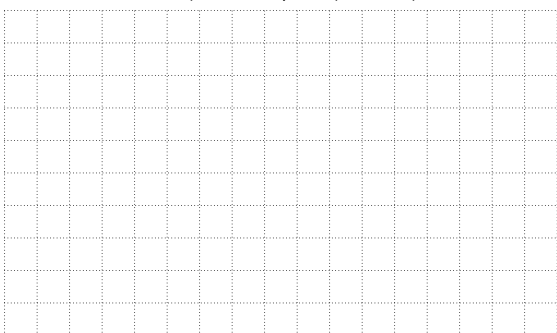
a) $y = (x + 4)^2 - 3$



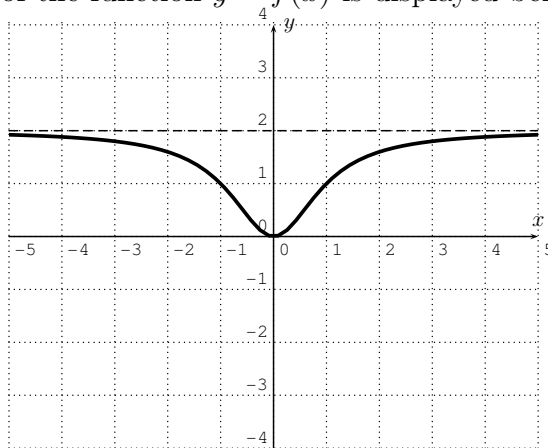
b) $y = -\frac{1}{x - 3}$



c) $y = \sqrt{-(x + 2)}$

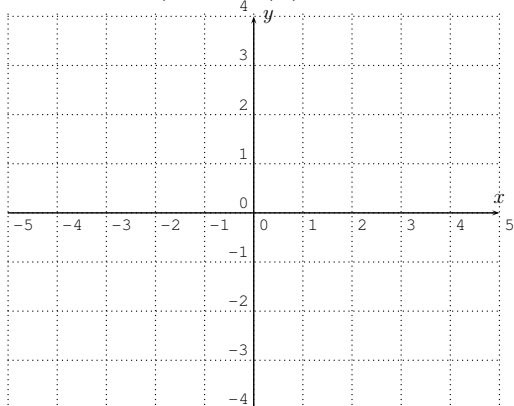


d) $y = (x - 4)^3$

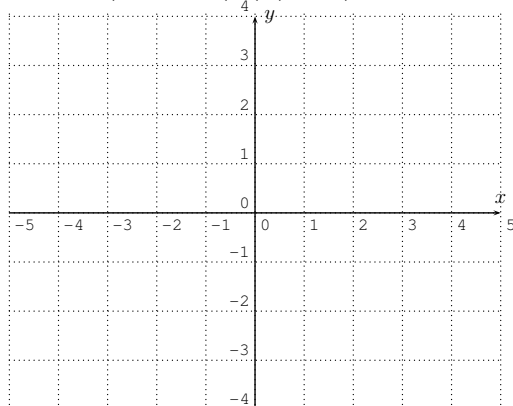
**Exercise 2.** The graph of the function $y = f(x)$ is displayed below.

Sketch the graphs of the transformed functions below.

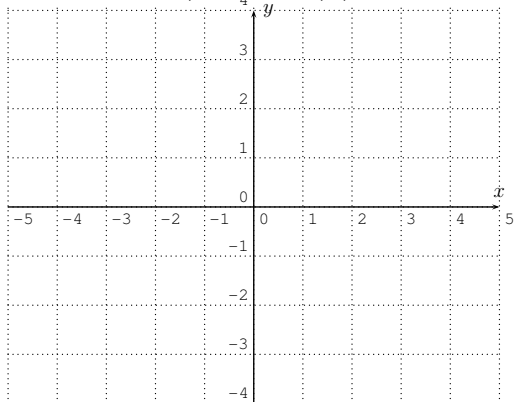
a) $y = f(x) + 2$



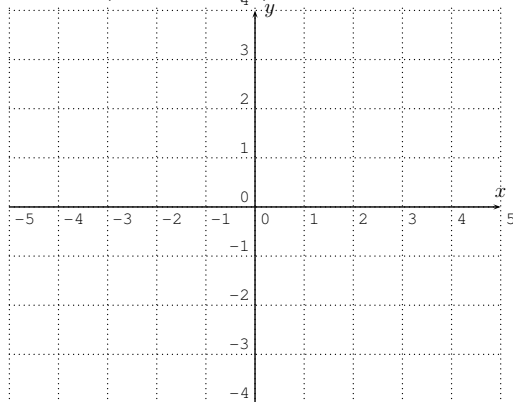
b) $y = -(f(x) + 2)$



c) $y = -f(x)$



d) $y = -f(x) + 2$



Exercise 3. Let $f(x) = 3x + 2$ and $g(x) = x^2 - 7x + 4$. Find the following compositions.

(a) $(f \circ g)(x) =$

(b) $(g \circ f)(x) =$

Now, let $f(x) = \frac{1}{x+2}$, $g(x) = \sqrt{x+3}$, and $h(x) = x^3 + 4$. Find the compositions:

(c) $(f \circ g \circ h)(x) =$

(d) $(h \circ f \circ g)(x) =$

Exercise 4. Complete the table by calculating the compositions.

x	2	4	6	8	10
$f(x)$	6	8	4	4	2
$g(x)$	2	7	8	2	4
$(f \circ g)(x)$					
$(g \circ f)(x)$					
$(g \circ g)(x)$					