

Show all of your work on your own paper. Sketch the graphs on your own paper, or you may use graph paper.

x	1	2	3	4
$f(x)$	3	4	5	6

x	1	2	3	4
$g(x)$	-1	3	8	10

Using the tables above, evaluate the following:

- $f \circ g(2)$
- $g \circ f(1)$

Graph the following function, and then state its domain and range:

$$3. f(x) = \begin{cases} 2 - x^2 & x < 1 \\ x + 2 & x \geq 1 \end{cases}$$

Given that $f(x) = 2x^2 + 5x - 3$ and $g(x) = x + 3$ find the following. Also list the domain:

- $(f + g)(x)$
- $(f - g)(x)$
- $(f \cdot g)(x)$
- $(f / g)(x)$
- $f(g(-2))$
- $g \circ f(3)$
- $f(g(x))$
- $g \circ f(x)$

12. Find the inverse of $f(x) = 2x^2 - 3$. State whether or not the inverse is a function, and state its domain and range.

13. Find the inverse of $f(x) = 5^{x-1}$. State whether or not the inverse is a function, and state its domain and range.

Show that the functions f and g are inverses by using the composition method.

14. $f(x) = 3(x-1)^2$

$$g(x) = \sqrt{\frac{x}{3}} + 1$$