

Please do all your work on a separate piece of paper. Please show all setup and work!

Find the domain of the function.

1. $f(x) = \sqrt[4]{1-x^2}$

Describe the transformations that occur in the function. Then sketch its graph.

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

3. $f(x) = -(x+10)^2 + 5$

Write an equation for the function that is described by the given characteristics.

4. The shape of $(x) = x^2$, but moved 3 units to the left, 7 units up, and reflected in the x-axis.

5. The shape of $f(x) = \sqrt{x}$, but moved 6 units to the left, and reflected in both the x-axis and the y-axis.

6. The shape of $f(x) = x^3$, but moved 13 units to the right.

Find (a) $(f+g)(x)$, (b) $(f-g)(x)$, (c) $(fg)(x)$, (d) $\left(\frac{f}{g}\right)(x)$

7. $f(x) = x^2$, $g(x) = 2-x$

Evaluate the indicated function for $f(x) = x^2 + 1$ and $g(x) = x - 4$

8. $(f-g)(3t)$

9. $(f+g)(2)$

Find (a) $f \circ g$, (b) $g \circ f$, (c) $f \circ f$.

10. $f(x) = x^3$, $g(x) = \frac{1}{x}$

Find (a) $f \circ g$, (b) $g \circ f$, Find the domain of each function and each composite function (A total of 4 domains)

11. $f(x) = |x|$, $g(x) = x + 6$

12. $f(x) = \frac{3}{x^2-1}$, $g(x) = x + 1$

Show that f and g are inverse functions.

13. $f(x) = 5x + 1$, $g(x) = \frac{x-1}{5}$

14. $f(x) = 1 - x^3$, $g(x) = \sqrt[3]{1-x}$

Find the inverse of the function f.

15. $f(x) = 2x - 3$

16. $f(x) = x^3 + 1$

17. $f(x) = \frac{4}{x}$