

Write an equation whose graph is  $g(x)$

1.  $f(x) = x^2$  a vertical stretch by a factor of 2, then a shift right 2 and up 5
2.  $f(x) = |x|$  a vertical compression by a factor of  $\frac{1}{4}$ , then a horizontal shift left 5 and a vertical shift down 3.
3.  $f(x) = x^3$  a reflection over the x-axis, shift to the right 1 and down 1.
4.  $f(x) = \sqrt{x}$  A vertical stretch by a factor of 5, horizontal shift right 7 and vertical shift down 3
5.  $f(x) = 3^x$  A horizontal shift right 3 and a vertical shift up 3

6.  $f(x) = \sqrt[3]{x}$  Vertical compression by a factor of  $\frac{1}{3}$ , a reflection over the x-axis, a horizontal shift right 4 and a vertical shift up 5.

Describe how to transform the graph of  $f$  into the graph of  $g$ .

7.  $f(x) = \sqrt{x+2}$  and  $g(x) = \sqrt{x-4}$

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

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

10.  $f(x) = -2|x-3| + 2$  and  $g(x) = |x+2| - 5$