

Transformations of Polynomial Functions Homework

- Write the equation for the graph of function $g(x)$, obtained by shifting the graph of $f(x) = x^2$ three units left, stretching the graph vertically by a factor of two, reflecting that result over the x -axis, and then translating the graph up four units.

$$f(x) = -2(x + 3)^2 + 4$$

- Describe the transformations that would produce the graph of the second function from the graph of the first function.

- $f(x) = x^2$ becomes $f(x) = (x - 3)^2 + 5$ right 3, up 5
- $f(x) = x^3$ becomes $f(x) = -3x^3 - 1$ reflect over x -axis, vertical stretch, down 1
- $f(x) = x^4$ becomes $f(x) = \frac{1}{2}(x + 1)^4 - 3$ vertical compression, left 1, down 3
- $f(x) = x^2$ becomes $f(x) = -2(3x - 2)^2 + 5$ reflect over x -axis, vertical stretch, horizontal compression, right 2, up 5

- Write the equation for the graph of function $g(x)$, obtained by shifting the graph of $f(x) = x^4$ two units right and up four units.

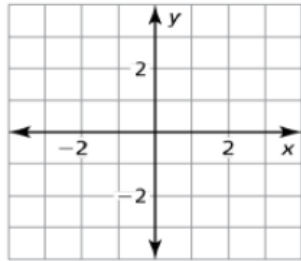
$$f(x) = (x - 2)^4 + 4$$

Describe the transformation(s) of f represented by g . Then graph the function.

4 $f(x) = x^3, g(x) = (x + 1)^3 + 2$

Transformation(s):

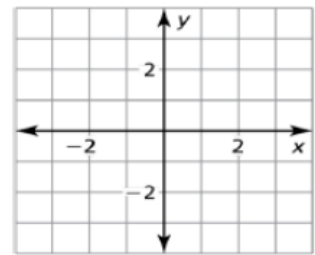
Left 1 and up 2



5 $f(x) = x^3, g(x) = -(x - 3)^3 + 1$

Transformation(s):

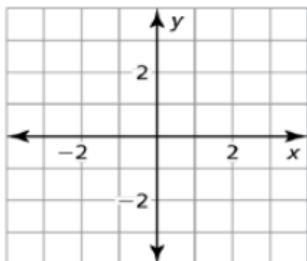
Reflect over the x -axis, right 3, up 1



6 $f(x) = x^3, g(x) = -x^3 + 1$

Transformation(s):

Reflect over the x -axis, up 1



7 $f(x) = x^3, g(x) = 2(x + 1)^3 + 1$

Transformation(s):

Vertical stretch, left 1, up 1

