

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

1. $f(x) + g(x)$
2. $g(x) - f(x)$
3. $g(f(x))$
4. $g(x) \cdot f(x)$

Let $g(x) = x^3 + 1$ and $h(x) = \sqrt[3]{x-1}$. Find each of the following:

5. $g(h(x))$
6. $h(g(x))$

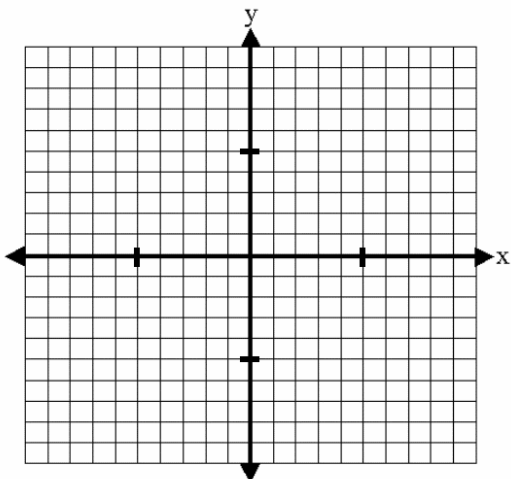
7. Complete for $g(x)$

x	y
-2	
-1	
0	
1	
2	

8. Complete for $h(x)$

x	y
-7	
0	
1	
2	
9	

9. Use the tables to graph $g(x)$ and $h(x)$.



10. Are $g(x)$ and $h(x)$ inverses? Use the compositions **and** the graph to explain how you know.

11. a. List the possible rational roots of $y = -9x^3 + 33x^2 - 24x - 12$.

b. Test the possible roots using synthetic division. For each possible root that is a zero of the function, write the corresponding factor.

c. Write the polynomial as a product of its factors. The final factor may have to be solved to find the remaining zeros.

d. Sketch a graph of the polynomial.

