

Perform the following polynomial operations:

1. $(2x^4 - 3x^2 + 4x - 7) + (3x^3 - 4x^2 - 7x + 10)$

$$2x^4 + 3x^3 - 7x^2 - 3x + 3$$

2. $(4x^3 - 5x^2 - 2x + 3) - (5 + 2x^2 - 4x - 6)$

$$-x^3 - 7x^2 + 2x + 9$$

3. $(2x^3 - 4)(x^2 + 5)$

$$2x^3 + x^2 + 1$$

4. $(3x + 5)(2x^2 - 3x + 6)$

$$2x^2 + 11$$

5.
$$\frac{(2x^3 - 13x^2 + 20x - 25)}{x - 5}$$

$$2x^2 - 3x + 5 + \frac{0}{x-5}$$

6. $(6x^3 - 5x^2 + 9x - 7) \div (2x - 1)$

$$6x^2 - 2x + 8 - \frac{3}{2x-1}$$

7. Given: $f(x) = \frac{3}{2}x - 12$ Find $f^{-1}(x)$

$$f^{-1}(x) = \frac{2}{3}x + 8$$

8. Given: $g(x) = 3(x + 5)^2 + 6$ Find $g^{-1}(x)$

$$g^{-1}(x) = \sqrt{\frac{x-6}{3}} - 5$$

9. If $f(x) = x^2 - 4$ and $g(x) = x + 5$, find $f(g(x))$

$$x^2 + 10x + 21$$

10. If $f(x) = 3x^2 - 5x + 7$ and $g(x) = 2x - 4$, find $g \circ f$

$$6x^2 - 10x + 10$$

Expand the following binomials by using Pascal's Triangle:

11. $(x - y)^5$

$$x^5 - 5x^4y + 10x^3y^2 - 10x^2y^3 + 5xy^4 - y^5$$

12. $(a + 4)^4$

$$a^4 + 16a^3 + 96a^2 + 256a + 256$$

Verify if the following pairs of functions are inverses:

13. $f(x) = -2x + 3$ and $g(x) = \frac{1}{2}x - \frac{3}{2}$

No

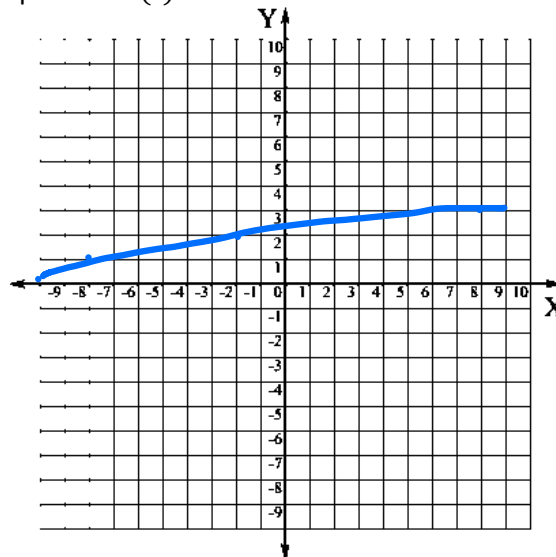
14. $f(x) = \sqrt{x + 7}$ and $g(x) = x^2 - 7$

yes

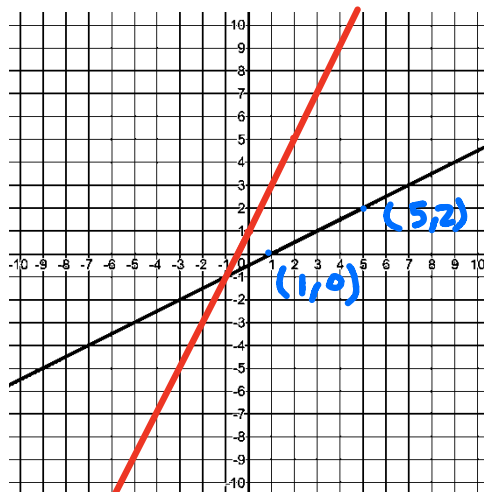
15. Given the table below for the function $H(t)$, sketch a graph of $H^{-1}(t)$.

t	$H(t)$
0	-10
1	-8
2	-2
3	8

x	y
-10	0
-8	1
-2	2
8	3



16. Given the graph of $f(x)$ below, sketch a graph of $f^{-1}(x)$ on the same coordinate plane.



17. Given $A(x)$, is $B(x)$ the graphical representation of the inverse of $A(x)$? _____

Explain:

Not reflection over $y=x$

