

Group problems involving polynomials and functions

1. Find each product.

a. $(x+6)(x-3)$ b. $(x-2)^2$ c. $x(-x+5)$

2. Find the function value at 2 for each of the following functions. Make sure that you show the step where you "plug in the value."

a. $f(x) = (x+6)(x-3)$ b. $g(x) = (x-2)^2$ c. $h(x) = x(-x+5)$

3. Find the function value at 2 for each of the following functions. . Make sure that you show the step where you "plug in the value."

a. $f(x) = x^2 + 3x - 18$ b. $g(x) = x^2 - 4x + 4$ c. $h(x) = -x^2 + 5x$

4. a. Compare parts "a", "b", and "c" for each of the first three problems. That is, what do the part "a"s all have in common? How about the part "b"s? The "c"s?

b. Most people complain that -2^2 is negative 4, and not just 4. Discuss why the part "c"s of problems 1-3 establish that -2^2 has to be -4 .

5. Consider the function $w(x) = 3 - 8x$.

a. Find $w(-4)$. b. Solve $w(x) = -4$ c. Find $w(0)$ d. Solve $w(x) = 0$

6. Suppose that k is the function $\{(2,7),(-4,3),(8,5),(6,12),(5,1)\}$.

a. What is the value of k at 5? B. Solve $k(x) = 5$.

7. Expand and simplify each expression.

a. $(w-6)(w^2+3w-1)$ b. $(x^2+1)(2x^3+4x^2-3x-2)$

c. $(x^2-4x-2)(2x^2-4x+4)$ d. $(y-2)(y^2+2y+4)$

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