

2.8 Homework: Operations on polynomials

1. Simplify the sum of these two polynomials: $(3x^3 + 5x^2 + x + 6) + (x^3 - 2x^2 + 7x - 8)$
2. Given the two functions $f(x) = 5x^3 + 8x^2 - x$ and $g(x) = x^4 + 2x^3 + x^2 - 5$, find their difference $f(x) - g(x)$ as a polynomial in standard form.

3. Multiply the two polynomials $f(x) = 2x + 5$ and $g(x) = 2x^2 + 3x - 1$. First complete the grid and then collect terms to find the product as a polynomial in standard form.

	$2x^2$	$+3x$	-1
$2x$			
$+5$			

4. Using subscript notation, write a recursive formula for the sequence 5, 10, 20, 40, 80, 160, ...
5. Using subscript notation, write a recursive formula for the sequence 11, 3, -5, -13, ...

6. Select all of the expressions that are equivalent to $x^2 - 7x + 12$.

(a) $(x - 2)(x - 6)$

(e) $(x - 4)(x + 3)$

(b) $(x - 6)(x - 2)$

(f) $(x + 3)(x + 4)$

(c) $(x + 4)(x + 3)$

(g) $(x - 4)(x - 3)$

(d) $(x - 3)(x - 4)$

(h) $x^2 + 7x - 12$

7. Select all solutions to the equation $(2x - 1)(x + 5) = 0$.

(a) $x = 0.5$

(d) $x = -0.5$

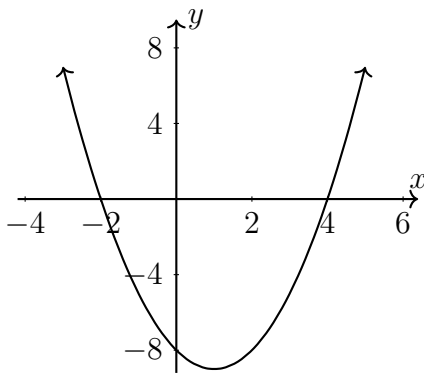
(b) $x = -5$

(e) $x = 5$

(c) $x = 2.5$

(f) $x = \frac{1}{2}$

8. Here is the graph of a quadratic function. Which of the following could be its equation?



(a) $y = (x + 2)(x - 4)$

(c) $y = (x + 2)(x + 4)$

(b) $y = (x - 2)(x + 4)$

(d) $y = (x - 2)(x - 4)$

9. Find all of the solutions to the equation $x(x - 11)(3x - 8)(x + 3) = 0$.

10. Without a calculator, evaluate each polynomial for the given value of x .

$$\begin{array}{ll} \text{(a) } f(x) = -x^3 + 12x^2 - x + 4, x = 1 & \text{(b) } g(x) = x^4 + x^3 + x^2, x = -1 \\ f(1) = & g(-1) = \end{array}$$

11. Use a calculator to find the value of $h(x) = 2x^3 - 3x^2 + 5x + 2$ for $x = -3$.

$$h(-3) =$$

12. A polynomial A is used to model the value of an investment account. Two deposits were made which earned interest annually.

$$A(x) = 150x^4 + 300x^2$$

(a) The first deposit of \$150 was made four years ago. How much was the second deposit, and how long ago was it made?

(b) Find the value of $A(x)$ for $x = 1.05$ to the *nearest cent*.

(c) If the interest rate earned on the account is $r = 7\frac{1}{2}\%$ what value of x would be used in the formula?