

SM3E 1.1: Polynomial Operations

Vocabulary: Polynomial, Monomial, Term, Degree of a term, Degree of a polynomial, Descending Order, Coefficient, Lead Coefficient, Constant

Vocabulary Problems: Answer the questions about each function:

1) $a(x) = -7x + 4x^2 + 3$

$a(x)$ is a: monomial polynomial (circle one)
 Number of terms:
 Degree of $a(x)$:
 Rewrite $a(x)$ in descending order:

Lead coefficient of $a(x)$:
 State the constant term of $a(x)$:

2) $b(x) = 12x^2 - 5x^3$

$b(x)$ is a: monomial polynomial (circle one)
 Number of terms:
 Degree of $b(x)$:
 Rewrite $b(x)$ in descending order:

Lead coefficient of $b(x)$:
 State the constant term of $b(x)$:

3) $c(x) = 200x^7$

$c(x)$ is a: monomial polynomial (circle one)
 Number of terms:
 Degree of $c(x)$:
 Rewrite $c(x)$ in descending order:

Lead coefficient of $c(x)$:
 State the constant term of $c(x)$:

4) $d(x) = 10x^4 - 6x^3 + 2x^5 - 7x^8$

$d(x)$ is a: monomial polynomial (circle one)
 Number of terms:
 Degree of $d(x)$:
 Rewrite $d(x)$ in descending order:

Lead coefficient of $d(x)$:
 State the constant term of $d(x)$:

5) $f(x) = -15$

$f(x)$ is a: monomial polynomial (circle one)
 Number of terms:
 Degree of $f(x)$:
 Rewrite $f(x)$ in descending order:

Lead coefficient of $f(x)$:
 State the constant term of $f(x)$:

6) $g(x) = 7x^2 - 10x + 2$

$g(x)$ is a: monomial polynomial (circle one)
 Number of terms:
 Degree of $g(x)$:
 Rewrite $g(x)$ in descending order:

Lead coefficient of $g(x)$:
 State the constant term of $g(x)$:

Problems: Simplify each expression into a single polynomial.

7) $(2x - 5) + (7x + 8)$ 8) $(5x^2 - x) + (2x^2 + 6x)$ 9) $(3x^2 - 5) + (4x^2 + 10x)$

10) $(x^2 - 3x + 7) + (5x^2 + 3x + 10)$ 11) $(-2x^2 + 4x + 6) + (6x^2 + 3x - 9)$

12) $(5x + x^2 + 5) + (2x^2 + 6)$ 13) $(-4x^2 + 4x + 1) + (15x - 6x^2 - 11)$

14) $(x - 5) - (x + 3)$ 15) $(5x^2 - 2x) - (3x^2 + 4x)$ 16) $(7x^2 + 1) - (2x^2 - 6x)$

17) $(2x - x^2 + 1) - (4x^2 + 1)$ 18) $(-9x^2 + 4x + 1) - (2x + 3x^2 - 1)$

19) $(2x - 5)(7x + 8)$

20) $(5x - 1)(2x + 10)$

21) $4x(4x + 7)$

22) $(2x^2 - 5)(3x + 4)$

23) $(5x^2 + 3)(9x - 5)$

24) $(3x - 1)(3x - 1)$

25) $(3x - 1)(x + 2) - (4x^2 + 3)$

26) $(3x - 1) - (x + 2)(4x^2 + 3)$

27) Problems 25) and 26) have the same terms being operated on but with a minor adjustment in how the terms are grouped. Write a paragraph that contrasts those two problems.