

Student: _____
Date: _____

Instructor: Andreas Lazari
Course: Math1111-Summer2018

Assignment: Section P.4 Homework

1. Is the algebraic expression a polynomial? If it is, write the polynomial in standard form.

$$6x^3 + 7x^4 - 3$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A. Yes, the expression $6x^3 + 7x^4 - 3$ is a polynomial. The expression written in standard form is _____.
- B. No, the expression $6x^3 + 7x^4 - 3$ is not a polynomial.

2. Find the degree of the polynomial.

$$x^3 + 5x^8 + 2x + 7x^7 + 7$$

The degree is 8. (Type a whole number.)

3. Perform the indicated operation.

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

Write the polynomial in standard form.

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

What is the degree of the polynomial?

_____ (Type a whole number.)

4. Perform the indicated operation.

$$(9x^3 - 9x^2 + 2x - 4) - (6x^3 - 4x^2 - 4x + 2) = 9x^3 - 9x^2 + 2x - 4 - 6x^3 + 4x^2 + 4x - 2 = 3x^3 - 5x^2 + 6x - 6$$

Write the polynomial in standard form.

$$(9x^3 - 9x^2 + 2x - 4) - (6x^3 - 4x^2 - 4x + 2) = 3x^3 - 5x^2 + 6x - 6$$

What is the degree of the polynomial?

_____ (Type a whole number.)

5. Find the product.

$$(7x+3)(x^2-7x+4) = 7x^3 - 49x^2 + 28x + 3x^2 - 21x + 12 = 7x^3 - 46x^2 + 7x + 12$$

$$(7x+3)(x^2-7x+4) = 7x^3 - 46x^2 + 7x + 12$$

(Simplify your answer.)

6. Find the product.

$$(4x-9)(4x+3) = 16x^2 + 12x - 36x - 27 = 16x^2 - 24x - 27.$$

$$(4x-9)(4x+3) = \underline{16x^2 - 24x - 27}$$

7. Multiply using the rule for the product of the sum and difference of two terms.

$$(9x+8)(9x-8) = (9x)^2 - (8)^2 = 81x^2 - 64$$

$$(9x+8)(9x-8) = \underline{81x^2 - 64}$$

8. Find the product.

$$(5x+2)^2 = (5x)^2 + 2(2)(5x) + (2)^2 = 25x^2 + 20x + 4.$$

$$(5x+2)^2 = \underline{25x^2 + 20x + 4} \text{ (Simplify your answer.)}$$

9. Multiply using the rule for the square of a binomial.

$$(6-r)^2 = (6)^2 - 2(6)(r) + (r)^2 = 36 - 12r + r^2 = r^2 - 12r + 36$$

$$(6-r)^2 = \underline{r^2 - 12r + 36} \text{ (Simplify your answer.)}$$

10. Subtract the polynomials. Indicate the degree of the resulting polynomial.

$$(x^3 - 4xy + 9y^2) - (7x^3 + 11xy + 6y^2) = x^3 - 4xy + 9y^2 - 7x^3 - 11xy - 6y^2 = -6x^3 - 15xy + 3y^2$$

$$(x^3 - 4xy + 9y^2) - (7x^3 + 11xy + 6y^2) = \underline{-6x^3 - 15xy + 3y^2}$$

The degree of the resulting polynomial is 3.

11. Use the FOIL method to multiply the binomials.

$$(x-7y)(3x+5y) = 3x^2 + 5xy - 21xy - 35y^2 = 3x^2 - 16xy - 35y^2.$$

$$(x-7y)(3x+5y) = \underline{3x^2 - 16xy - 35y^2} \text{ (Simplify your answer.)}$$

12. Find the product.

$$(8x+7y)^2 = (8x)^2 + 2(8x)(7y) + (7y)^2 = 64x^2 + 112xy + 49y^2.$$

$$(8x+7y)^2 = \underline{64x^2 + 112xy + 49y^2}$$

13. Find the product.

$$(x-y)(x^2 + 19xy + y^2) = x^3 + 19x^2y + xy^2 - x^2y - 19xy^2 - y^3$$

$$(x-y)(x^2 + 19xy + y^2) = \underline{x^3 + 18x^2y - 18xy^2 - y^3} = x^3 + 18x^2y - 18xy^2 - y^3$$

14. Multiply using the rule for the product of the sum and difference of two terms.

$$(4x + 5y)(4x - 5y) = (4x)^2 - (5y)^2 = 16x^2 - 25y^2.$$

$$(4x + 5y)(4x - 5y) = \underline{16x^2 - 25y^2}$$

1. A. Yes, the expression $6x^3 + 7x^4 - 3$ is a polynomial. The expression written in standard form is $7x^4 + 6x^3 - 3$.

2. 8

3. $4x^3 + 7x^2 - 11x - 6$

3

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

3

5. $7x^3 - 46x^2 + 7x + 12$

6. $16x^2 - 24x - 27$

7. $81x^2 - 64$

8. $25x^2 + 20x + 4$

9. $r^2 - 12r + 36$

10. $-6x^3 - 15xy + 3y^2$

3

11. $3x^2 - 16xy - 35y^2$

12. $64x^2 + 112xy + 49y^2$

13. $x^3 + 18x^2y - 18xy^2 - y^3$

14. $16x^2 - 25y^2$
