

## Unit 2 Quiz 1 Review

Write each polynomial in standard form. Identify the leading coefficient, degree and number of terms.

1.  $3x^2 + 6x - 3x^3 + 4$   
 $-3x^3 + 3x^2 + 6x + 4$   
 LC: -3

Cubic Polynomial

Add or subtract.

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

$$\boxed{-x^2 - 11x + 17}$$

2.  $2x - 5 + 3x - 2$   
 $5x - 7$   
 LC: 5  
 Linear Binomial

3.  $5x^5 - 3x^3 - x^4$   
 $5x^5 - x^4 - 3x^3$   
 LC: 5  
 Quintic Trinomial

5.  $(3x^2 + 1) + (4x^2 + 3)$   
 $3x^2 + 1 + 4x^2 + 3$   
 $\boxed{7x^2 + 4}$

6.  $(9x^3 - 6x^2) - (2x^3 + x^2 + 2)$   
 $9x^3 - 6x^2 - 2x^3 - x^2 - 2$   
 $\boxed{7x^3 - 7x^2 - 2}$

7.  $(5a^5 - a^4) + (a^5 + 7a^4 - 2)$   
 $5a^5 - a^4 + a^5 + 7a^4 - 2$   
 $\boxed{6a^5 + 6a^4 - 2}$

Multiply.  
 8.  $3x^3(27x^3 + 8y^3)$   
 $\boxed{81x^6 + 24x^3y^3}$

9.  $2cd^4(-4c^6d^5 - c^3d)$   
 $\boxed{-8c^7d^9 - 2c^4d^5}$

10.  $(a + b)(3ab + b^2 - 4a)$   
 $3a^2b + ab^2 - 4a^2 + 3ab^2 + b^3 - 4ab$   
 $\boxed{3a^2b + 4ab^2 - 4a^2 + b^3 - 4ab}$

11.  $(x - 2)(x + 4)^2$   
 $(x - 2)(x + 4)(x + 4)$   
 $(x - 2)(x^2 + 4x + 4x + 16)$   
 $(x - 2)(x^2 + 8x + 16)$   
 $x^3 + 8x^2 + 16x - 2x^2 - 16x - 32$   
 $\boxed{x^3 + 6x^2 - 32}$

12.  $(2x - 3)^2(x - 1)$   
 $(2x - 3)(2x - 3)(x - 1)$   
 $(4x^2 - 6x - 6x + 9)(x - 1)$   
 $(4x^2 - 12x + 9)(x - 1)$   
 $4x^3 - 4x^2 - 12x^2 + 12x + 9x - 9$   
 $\boxed{4x^3 - 16x^2 + 21x - 9}$

13.  $x(x + 5)^2$   
 $x(x + 5)(x + 5)$   
 $x(x^2 + 5x + 5x + 25)$   
 $x(x^2 + 10x + 25)$   
 $\boxed{x^3 + 10x^2 + 25x}$

Expand using Pascal's Triangle.

$$14. (x+4)^4 \begin{array}{l} 1(x)^4(4)^0 = 1x^4(1) = x^4 \\ 4(x)^3(4)^1 = 4x^3(4) = 16x^3 \\ 6(x)^2(4)^2 = 6x^2(16) = 96x^2 \\ 4(x)^1(4)^3 = 4x(64) = 256x \\ 1(x)^0(4)^4 = 1(1)(256) = 256 \end{array}$$

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

$$15. (x-5)^3 \begin{array}{l} 1(x)^3(-5)^0 = 1(x^3)(1) = x^3 \\ 3(x)^2(-5)^1 = 3(x^2)(-5) = -15x^2 \\ 3(x)^1(-5)^2 = 3(x)(25) = 75x \\ 1(x)^0(-5)^3 = 1(1)(-125) = -125 \end{array}$$

$$x^3 - 15x^2 + 75x - 125$$

$$16. (2x+4)^4 \begin{array}{l} 1(2x)^4(4)^0 = 1(16x^4)(1) = 16x^4 \\ 4(2x)^3(4)^1 = 4(8x^3)(4) = 128x^3 \\ 6(2x)^2(4)^2 = 6(4x^2)(16) = 384x^2 \\ 4(2x)^1(4)^3 = 4(2x)(64) = 512x \\ 1(2x)^0(4)^4 = 1(1)(256) = 256 \end{array}$$

$$16x^4 + 128x^3 + 384x^2 + 512x + 256$$

$$17. (x-3y)^3 \begin{array}{l} 1(x)^3(-3y)^0 = 1x^3(1) = x^3 \\ 3(x)^2(-3y)^1 = 3x^2(-3y) = -9x^2y \\ 3(x)^1(-3y)^2 = 3x(9y^2) = 27xy^2 \\ 1(x)^0(-3y)^3 = 1(1)(-27y^3) = -27y^3 \end{array}$$

$$x^3 - 9x^2y + 27xy^2 - 27y^3$$

Find the coefficient for the following expansion.

18.  $x^2y^3$  in the expansion  $(x+2y)^5$

$$\begin{array}{l} 1(x)^5(2y)^0 \\ 5(x)^4(2y)^1 \\ 10(x)^3(2y)^2 \\ \rightarrow 10(x)^2(2y)^3 = 10x^2(8y^3) = 80x^2y^3 \\ 5(x)^1(2y)^4 \\ 1(x)^0(2y)^5 \end{array}$$

$$80$$

Find the term of the following expansion.

20. 4<sup>th</sup> term of the expansion  $(x-2y)^4$

$$\begin{array}{l} 1(x)^4(-2y)^0 \\ 4(x)^3(-2y)^1 \\ 6(x)^2(-2y)^2 \\ \rightarrow 4(x)^1(-2y)^3 = 4x(-8y^3) = -32xy^3 \\ 1(x)^0(-2y)^4 \end{array}$$

$$-32xy^3$$

Simplify.

$$22. -i + (8-2i) - (5-9i)$$

$$-i + 8 - 2i - 5 + 9i$$

$$3 + 6i$$

$$23. (3i)(6+5i)$$

$$18i + 15i^2$$

$$18i - 15$$

$$24. (3i)(6i^3)$$

$$18i^4$$

$$18$$

$$25. 4i^{24} + 3i^3 - 12i + 16$$

$$\frac{24}{4} = 6$$

$$4(1) + 3(-i) - 12i + 16$$

$$4 - 3i - 12i + 16$$

$$20 - 15i$$

$$26. (2+3i)^4$$

$$1(2)^4(3i)^0 = 1(16)(1) = 16$$

$$4(2)^3(3i)^1 = 4(8)(3i) = 96i$$

$$6(2)^2(3i)^2 = 6(4)(9i^2) = 216i^2$$

$$4(2)^1(3i)^3 = 4(2)(27i^3) = 216i^3$$

$$1(2)^0(3i)^4 = 1(1)(81i^4) = 81i^4$$

$$16 + 96i - 216 - 216i + 81$$

$$-119 - 120i$$

$$27. i^{44} + -i^3 - (2+i)$$

$$\frac{44}{4} = 11$$

$$1 + -(-i) - 2 - i$$

$$-1$$