

Algebra II

Test Review – Polynomials (Unit 8)

For #1-8, simplify:

$$1. (2x^3y^2)^3(5x^3y^{-2})$$

$$8x^9y^6 \cdot 5x^3y^{-2}$$

$$40x^{12}y^4$$

$$3. (2a^5b^{-7}c^3)(6a^{-3}b^{-2}c)$$

$$12a^2b^{-9}c^4 = \frac{12a^2c^4}{b^9}$$

$$5. (x^2y^4z)(x^3y^2)(\cancel{2^4})^4 2^4x^{12}y^4z^8$$

$$2^4x^{17}y^{10}z^9$$

$$7. \frac{(m^3n)(4mn^{-5})}{2m^2n}$$

$$\frac{4m^4n^{-4}}{2m^2n}$$

$$\frac{2m^2n^{-5}}{1}$$

$$2. \frac{8x^3y^5}{5x^4y^{-2}}$$

$$\frac{8y^7}{5x}$$

$$4. \left(\frac{3x^6y^5}{4x^9y^4}\right)^{-2} \left(\frac{3xy^1}{4}\right)^{-2} \left(\frac{3x^2y^6}{4y^{-2}}\right)^{-2}$$

$$\frac{4^2x^6y^2}{3^2y^2}$$

$$6. \left(\frac{x^7y^3}{3x^{-2}y^8}\right)^3$$

$$8. \frac{3x^4y^5z^8}{6x^5y^6z^9}$$

$$\frac{1xyz}{2xyz}$$

For #9-16, simplify:

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

$$\begin{array}{r} -4 + 8x^2 + 2x \\ \hline 8x^2 + 2x - 4 \end{array}$$

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

$$\begin{array}{r} -x^3 + 4x^2 - 6x + 7 \\ \hline \end{array}$$

$$11. (2x^4+6)+(3x^3-5+8x^2)$$

$$12. (9x-4x^2)-(2x^2-6x+5)$$

$$13. 2x^4y^3(5x^7-2x^2y^5+8xy^3)$$

$$\begin{array}{r} 10x^{11}y^3 - 4x^6y^8 + 16x^5y^6 \\ \hline \end{array}$$

$$14. 4a(7ab^2+8a^3b-1)$$

$$\begin{array}{r} 28a^2b^2 + 32a^4b - 4a \\ \hline \end{array}$$

$$15. (2x-4)(3x^2+7x-1)$$

$$\begin{array}{r} 6x^3 + 14x^2 - 2x - 12x^2 - 28x + 5 \\ \hline 6x^3 + 2x^2 - 30x + 5 \end{array}$$

$$16. (3a-5)(6a^2+7a-9)$$

Simplify by Dividing.

17.
$$\frac{9x^4y^2 + 36x^5y^3 - 18x^8y^5}{9x^3y}$$

18.
$$\frac{20a^3b^7 - 16a^7b^8 + 16a^2b^5}{4a^2b^3}$$

19.
$$\frac{6x^4 + 12x^3 - 18x^4}{6x^3}$$

20.
$$\frac{20m^7n + 50m^4n^6 + 110m^2n^4}{10mn}$$

Divide using Synthetic Division

21. $(x^3 - 4x^2 - 11x - 6) \div (x - 6)$

22. $(x^4 - 17x^3 + 73x^2 - 29x - 20) \div (x - 10)$

Divide using Synthetic Division

23. $(x^5 + x^4 - 8x - 8) \div (x + 1)$

$$x^5 + x^4 + 0x^3 + 0x^2 - 8x - 8$$

$$\begin{array}{r|rrrrrr} -1 & 1 & 1 & 0 & 0 & -8 & -8 \\ & & -1 & 0 & 0 & 0 & 8 \\ \hline & 1 & 0 & 0 & 0 & -8 & 0 \end{array}$$

24. $(x^5 + 7x^4 + 12x^3 - 6x - 24) \div (x + 3)$

$$x^4 - 8$$

State the degree and leading coefficient for each polynomial.

25. $2x + 3x^3 - 4x^4 + 5x^2$

Degree:

4th

Leading Coefficient:

-4

26. $3x^4 - 2x + 5x^2 - 2x^5$

Degree:

5th

Leading Coefficient:

-2

Evaluate the following functions with the independent values provided for each problem.

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

$$g(x) = 3x^3$$

27. $f(3) =$

28. $g(5) =$

29. $f(6a^3) =$

30. $f(-4b) =$

31. $g(5x^4y^3) =$

32. $f(3x-1) =$

33. $g(4x^4) =$

34. $f(x-3) =$

35. $f(a) + f(2a) =$

36. $g(-4m^2nq^5) =$

$$= 3(-4m^2nq^5)$$

$$= 3(-4m^2nq^5)$$

$$= -12m^2nq^5$$

Evaluate the following functions with the independent values provided for each problem.

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

$$g(x) = 3x^3$$

37. $f(3m^3)$

38. $3f(4c)$

39. $2g(7)$

40. $f(-7) + f(7)$