Chapter 6 Quiz Review

Determine if each is a polynomial. If no, explain why. If yes, classify the polynomial by it's degree and number of terms.

1. $4x^2y - 2xy + x - 2$
2. $-m^3n^2pqs^9$
3. $-7x + 2y^3$
4. $4x^{-3}$

Simplify the expression.

5. $-(j^3km^4)^3(jk^3m^2)^2$
6. $(ab^3)^{7n}(a^2b)^{2n}$
7. $\left(\frac{3x^2y^3}{6xy}\right)^2\left(\frac{xy^3}{4xy}\right)^2$
8. $\left(\frac{d^2f^2g^2}{df}\right)^2 \cdot \left(\frac{-2f}{g^3}\right)^4 \cdot \left(\frac{3g^4}{df}\right)^3$
9. $(4a^3)^? \cdot 10a^6 = 160a^{12}$

Find the value of x and y.

10. $\begin{cases} \frac{a^x \cdot a^y}{a^5} = a^{10} \\ \frac{a^3 \cdot a^{y-4}}{a^{10}} = a^{20} \end{cases}$

Simplify the expression.

11. $\frac{12x^8y^{-7}}{(4x^{-2}y^{-6})^2}$
12. $\left(\frac{5}{2}\right)^{-3}$
13. $4^{-7} \cdot 4^3$
14. $6a^{-4}b^0$
15. $\frac{8x^3y^{-4}}{12x^2y^{-3}}$
16. $9^{\frac{3}{2}}$
17. $(2xy^{-5})^3$
18. $\frac{(2x)^{-2}y^5}{-4x^2y^2}$
19. $\frac{12x^8y^{-7}}{(4x^{-2}y^{-6})^2}$
20. $\sqrt{\frac{4x^4y^{16}}{9x^3y^{-4}}}$
21. $\sqrt[6]{64x^9y^{12}} \cdot -16x^3(y^{-3}z)^2$
22. $16^{\frac{1}{4}}$
23. $144^{\frac{1}{2}} - 27^{\frac{1}{3}}$
24. $81^{\frac{3}{2}}$
25. $64^{\frac{7}{6}}$
26. In an experiment, the approximate population P of a bacteria colony is given by $P = 15t^{\frac{5}{3}}$, where t is the number of days since start of the experiment. Find the population of the colony on the 8^{th} day.

Simplify. All variables represent nonnegative numbers.

27. $\sqrt[5]{x^{10}z^5}$

28. $\left(a^4 b^{\frac{1}{4}}\right)^4 \sqrt[3]{b^3}$

Find the degree of each polynomial.

29. $7a^3b^2 - 2a^4 + 4b - 15$

30. $25x^2 - 3x^4$

Write each polynomial in standard form. Then give the leading coefficient.

31. $24g^3 + 10 + 7g^5 - g^2$

32. $14 - x^4 + 3x^2$

Classify each polynomial according to its degree and number of terms.

33. $18x^2 - 12x + 5$

34. $2x^4 - 1$

35. The polynomial $3.675v + 0.096v^2$ is used to estimate the stopping distance in feet for a car whose speed is v miles per hour on flat dry pavement. What is the stopping distance for a car traveling at 70 miles per hour?

Chapter 6 Quiz Review

1. $4x^2y - 2xy + x - 2$
yes; cubic polynomial 4 terms
degree is 3

2. $-m^3n^2pqs^9$
yes; 16th degree monomial
degree is 16
1 term.

3. $-7x + 2y^3$
yes, cubic binomial
3rd degree; 2 terms.

4. not a polynomial; negative exponent

5. $-(j^3km^4)^3(jk^3m^2)^2$
$-(j^9k^3m^{12})(j^2k^6m^4)$
$-j^{11}k^9m^{16}$

6. $(ab^3)^{7n}(a^2b)^{2n}$
$a^{7n}b^{21n} \cdot a^{4n}b^{2n}$
$a^{11n}b^{23n}$

7. $\left(\frac{3x^2y^3}{6xy}\right)^2 \left(\frac{xy^3}{4xy}\right)^2$
$\frac{9x^4y^6}{36x^2y^2} \cdot \frac{x^2y^6}{16x^2y^2}$
$\frac{x^2y^8}{64}$

8. $\left(\frac{d^2f^2g^2}{df}\right)^2 \cdot \left(\frac{-2f}{g^3}\right)^4 \cdot \left(\frac{3g^4}{df}\right)^3$

$\frac{d^4f^4g^4}{d^2f^2} \cdot \frac{16f^4}{g^{12}} \cdot \frac{27g^{12}}{d^3f^3}$

$\frac{432\,d^4f^8g^{16}}{d^5f^5g^{12}}$

$\frac{432f^3g^4}{d}$

9. $(4a^3)^x \cdot 10a^6 = 160a^{12}$

$3x+6=12$

$3x=6$

$x=2$

10. $\frac{a^x a^y}{a^5} = a^{10}$ $\qquad x+y-5=10$ $\qquad x+y=15$

$\frac{a^3a^{y-4}}{a^{15}} = a^{20}$ $\qquad 3+y-4-10=20$ $\qquad y-11=20$

$y=31$

$x+31=15$

$x=-16$

$(-16, 31)$

11. $\frac{12x^8y^{-7}}{(4x^{-2}y^{-10})^2}$

$\frac{3\cancel{12}x^8y^{-7}}{4\cancel{16}x^{-4}y^{-12}}$

$\frac{3}{4}x^{12}y^5$

12. $\left(\frac{5}{2}\right)^{-3}$

$\frac{2^3}{5^3}$

$\frac{8}{125}$

13. $4^{-7} \cdot 4^3$

$\frac{4^3}{4^7} = \frac{1}{4^4} = \frac{1}{256}$

14. $6a^{-4}b^0$

$\frac{6}{a^4}$

15. $\frac{8x^3y^{-4}}{12x^4y^{-3}}$

$\frac{2x}{3y}$

16 $9^{\frac{3}{2}}$

$(\sqrt{9})^3$

3^3

27

17. $(2xy^{-5})^3$

$8x^3y^{-15}$

$\frac{8x^3}{y^{15}}$

18. $\frac{(2x)^{-2}y^5}{-4x^2y^2}$

$\frac{y^{\cancel{5}3}}{(2x)^{\cancel{2}}(-4x^{\cancel{2}}y^{\cancel{2}})}$

$4x\cdot(-4x^2)$

$\frac{y^3}{-16x^4}$

19. $\frac{12x^8y^{-7}}{(4x^{-2}y^{-6})^2}$

$\frac{12x^8y^{-7}}{16x^{-4}y^{-12}}$

$\frac{3\ \cancel{12}x^8\cdot x^4y^{12}}{4\ \cancel{16}\ y^7}$

$\frac{3x^{12}y^5}{4}$

20. $\sqrt{\frac{4x^4y^{16}}{9x^3y^{-4}}}$

$\left(\frac{4x^4y^{16}}{9x^3y^{-4}}\right)^{\frac{1}{2}}$

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

$\frac{2x^{\frac{1}{2}}y^{10}}{3}$

21. $\sqrt[6]{64x^9y^{12}} \cdot -16x^3(y^{-3}z)^2$

$(64x^9y^{12})^{\frac{1}{6}} \cdot -16x^3y^{-6}z^2$

$2x^{\frac{3}{2}}y^2 \cdot -16x^3y^{-6}z^2$

$\frac{-32x^{\frac{9}{2}}z^2}{y^4}$

22. $16^{\frac{1}{4}}$

$\sqrt[4]{16}$

2

23. $\sqrt{144} - \sqrt[3]{27}$

$12 - 3$

9

24. $(\sqrt{81})^3$

2^3

729

25. $(\sqrt[6]{64})^7$

2^7

128

26. $P = 15t^{\frac{5}{3}}$

$15 \cdot 8^{\frac{5}{3}}$

$15 \cdot 2^5$

$15 \cdot 32$

480 bacteria

27. $\sqrt[5]{x^{10}z^5}$

$(x^{10}z^5)^{\frac{1}{5}}$

x^2z

28. $(a^4b^{\frac{1}{4}})^4\sqrt[3]{b^3}$

$a^{16}b \cdot b$

$a^{16}b^2$

29. $7a^3b^2 - 2a^4 + 4b - 15$

degree is 5

30 $25x^2 - 3x^4$

degree is 4

31. $24g^3 + 10 + 7g^5 - g^2$

$7g^5 + 24g^3 - g^2 + 10$

leading coefficient is 7

32. $14 - x^4 + 3x^2$

$-x^4 + 3x^2 + 14$

leading coefficient is -1.

33. $18x^2 - 12x + 5$

quadratic trinomial.

34. $2x^4 - 1$

quartic binomial.

35. $3.675v + .096v^2$

$3.675(70) + .096(70)^2$

$257.25 + 470.4$

727.65 feet