8.1-8.4 Quiz Review

Name Key

Hour _____

For #'s 1-6: Complete each property of exponents.

1. $a^0 =$ 1
2. $a^{-n} =$ $\frac{1}{a^n}$
3. $\frac{1}{a^{-n}} =$ a^n
4. $a^m \cdot a^n =$ a^{m+n}
5. $(a^m)^n =$ a^{mn}
6. $(ab)^n =$ $a^n b^n$

For #'s 7-36: Simplify each expression. Use positive exponents.

7. $x^3 y^{-3} z^4$

$\frac{x^3 z^4}{y^3}$

8. $8b^2(-2b)^4$

$8 \cdot b^2 \cdot (-2)^4 \cdot b^4$

$8 \cdot 4 \cdot b^6$

$32b^6$

9. $-7(2+5a)^0$

$\frac{-7}{1}$

-7

10. y^{-2}

$\frac{1}{y^2}$

11. -3^4

$-1 \cdot 3^4$

-81

12. $\frac{4u^{-6}}{6u^0}$

$\frac{4}{6u^6} = \frac{2}{3u^6}$

13. $3a^4 \cdot 4a^{-2} \cdot -2a$

$-24a^3$

14. $(12+k^0)^{-2}$

$(12+k^0)^{-2}$

$(12+1)^{-2}$

$(13)^{-2} = \frac{1}{13^2} = \frac{1}{169}$

$(13)^{-2} = \frac{1}{132}$

15. $\frac{9^0 m^{-4}}{3n^{-5}}$

$\frac{n^5}{3m^4}$

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

$\frac{5x^3 z^4}{y^2}$

17. $3p^4 q^0$

$3p^4$

18. $(-2)^{-4}$

$\frac{1}{(-2)^4} = \frac{1}{16}$

19. $ab^3 \cdot a^2 b^5$

$a^3 b^8$

20. $4g^3(-g^5)$

$-4g^8$

21. $2a^4 \cdot -3a \cdot 4a^3$

$-24a^8$

22. $\left(\frac{4t}{s^2}\right)^3$

$\frac{4^3 t^3}{(s^2)^3} = \frac{64t^3}{s^6}$

23. $\frac{7j}{k^0 l^{-2}}$

$7jl^2$

24. $\left(\frac{2x}{y^2}\right)^3$

$\frac{2^3 x^3}{(y^2)^3} = \frac{8x^3}{y^6}$

25. $r^7 \cdot s^4 \cdot s \cdot r^3$

$r^{10}s^5$

26. $p^{-8}q^2r^3$

$\frac{q^2r^3}{p^8}$

27. $4g(-2g^2h)(3h^3)$

$-24g^3h^4$

28. $\left(\frac{x}{2y}\right)^{-2}$

$\frac{x^{-2}}{y^{-2}} = \frac{2^2y^2}{x^2} = \frac{4y^2}{x^2}$

29. $(3x^3)(2x^{-1}y^{-4})$

$6x^2y^{-4} = \frac{6x^2}{y^4}$

30. $(4a^3b^{-4}c^2)^3$

$4^3(a^3)^3(b^{-4})^3(c^2)^3$

$64a^9b^{-12}c^6 = \frac{64a^9c^6}{b^{12}}$

31. $(5a^3b^5)^4$

$5^4(a^3)^4(b^5)^4$

$625a^{12}b^{20}$

32. $(a^3)^6$

a^{18}

33. $(7p^4)(5p^{-9})$

$35p^{-5} = \frac{35}{p^5}$

4. $-5m^2(3mn^3)$

$-15m^3n^3$

35. $z^5 \cdot z^{-3}$

z^2

36. $9t^3(t^2)^3$

$9t^3 \cdot t^6 = 9t^9$

For #37-40: Find the value of each formula using the numbers given for each question.

37. The volume of a sphere is: $V = 4.2r^3$.
Find the volume (V) if the radius is r = 10.25 cm.

$V = 4.2(10.25)^3$

$V \approx 4522.94 \text{ cm}^3$

38. The surface area of a sphere is: $S = 12.6r^2$.
Find the surface area (S) of a sphere with radius of r = 12.5cm.

$S = 12.6(12.5)^2$

$S = 1968.75 \text{ cm}^2$

39. The amount of money in an account earning compound interest is: $A = P(1.08)^{10}$.
Find the amount (A) if the original principal is P=$725.

$A = 725(1.08)^{10}$

$A = \$1565.22$

40. The pressure due to gravity on a sphere is: $P = 10.08r^{-3}$.
Find the pressure (P) if the radius is r=.05 in.

$P = 10.08r^{-3}$

$P = 10.08 \cdot (.05)^{-3}$

$P = \frac{10.08}{(.05)^3}$

$P = 80,640 \text{ in}$