Exponents and Polynomials

A. First Law of exponents

1. $y^5x^{10}\cdot y^3x^6$
2. $xy\cdot x^2y^3$
3. $y\cdot y\cdot y^3\cdot y\cdot y^2$
4. x^2x^4
5. b) $y^3y^6y^2$
6. $x^5y^2\cdot x^3y^4$
7. $3x^2\cdot 4x^5$
8. $5^3x^4y\cdot 5^2xy^4$
9. $x^2x^2y^3y^6\cdot x^4x^6y^2y^2$
10. $3^2\cdot 3\cdot 5^3$
11. $4x^2y^3\cdot 7x^2y^3$
12. $11xy^2\cdot 11x^3y$
13.. $12w^6x^3y\cdot 12^3w^7x^2y^3$

B. Second Law of Exponents:

1. $(x^7)^2$
2. $\left(y^4\right)^6$
3. $\left(w\ y^2\right)^6$
4. $(x^4y^2)^3$
5. $(3x^2y)^3$
6. $(4^2x^3y^2z)^3$
7. $\left(m^4yx^3w^4\right)^3$
8. $\left(3y^3\right)^3$
9. $\left(5^6x^3y^3\right)^5$
10.. $\left(5xy^2\right)^0$
11. $\left(3x^3y^2\right)^2\left(3x^2y^3\right)^2$
12. $(2wx)^3\left(2^2w^2x^7\right)^3$

C. Third Law of Exponents

1. $\frac{y^9}{y^4}$
2. $\frac{y^4}{y^9}$
3. $\frac{w^6}{w^6}$
4. $\frac{x^7}{x^3}$
5. $\frac{y^6}{y^{10}}$
6. $\frac{x^5y^7}{x^2y^9}$
7. $\frac{w^3v^4}{w^2v^8}$
8. $\frac{20w^3y^6}{10w^3y^3}$
9. $\frac{10x^6y}{5xy^4}$
10. $\frac{3^4x^3y^4}{3^2x^3y^2}$
11. $\frac{\left(x^2y^4\right)^4}{\left(x^3y^3\right)^2}$
12. $\frac{\left(w^{10}z^4\right)^2}{(w^8y^3)^3}$
13. $\frac{10^{10}a^3b^2c^8}{10^8a^5b^7c^2}$

D. Simplify the following:

1. $\frac{\left(4^2a^3b^4\right)^2\left(4^5a^3b^2\right)^3}{\left(4a^3b^2\right)^0}$
2. $\frac{\left(4a^2bc^3\right)^4\left(4^3a^2b^5c\right)^2}{\left(4^3a^6b^7c^3\right)^2}$

3. $7^{2x} \cdot 7^{3x}$

4. $2^{a} \cdot 2^{b}$

5. $7^{x} \cdot 11^{x}$

6. $(x^{z})^{5}$

7. $(3^{2c})^{c}$

8. $(2^{2x+1})^{3x-1}$

9. $(x^{\frac{3}{7}})^{\frac{1}{4}}$

10. $(x^{\frac{5}{3}}y^{\frac{4}{7}})^{\frac{2}{5}}$

11. $2^{4x^2-7x+3} \cdot 2^{3x^2+5x+4}$

12. $\dfrac{3^{5x-5}}{3^{4x+7}}$

13.. $\dfrac{x^{\frac{4}{5}}}{x^{\frac{2}{7}}}$

14. x^{-7}

15.. $(5x^2-2x+3)^{0}$

16. . $\dfrac{2x^{-7}}{-3y^{-4}}$

17. . $\left(2x^{-6}y^{-4}\right)^{-5}$

18. $\dfrac{3x^{-8}y^{-5}}{2x^{-3}y^{-7}}$

28. $\dfrac{\left(12x^{-3}y\right)^{3}(3x^{-5}y^{2})^{-3}}{(4x^{-1}y^{4})^{-2}}$