

Exercises — Arithmetic of Exponents

Simplify each of the following expressions:

1. $5x^2x^3$

2. $5x^33x^2$

3. $(9xyz^3)^2$

4. $(5x^33x^2)(3x^4)$

5. $(5x^33y^2)(3x^4)$

6. $(3a^3)^3$

7. $\frac{3x^5}{3x^{-5}}$

8. $-\left(\frac{4x^2y^3}{3xy}\right)^2$

9. $\frac{7x^{-3}y^3}{8x^2y^{-3}}$

Write the following using only positive exponents:

10. $\frac{3x^{-6}y^{-2}}{6x^4y^{-1}}$

11. $\left(\frac{15x^{-4}y^2z}{5x^2y^{-3}}\right)^2$

Simplify:

12. $\left(\frac{5a^3b^{-4}c^0}{5x^2y^{-3}}\right)^0$

Write the following using only positive exponents:

13. $(x^{-1}y^{-1})^{-1}$

14. $(x^{-1} + y^{-1})^{-1}$

Simplify:

15. $(x^2 + x^0)(1 + x^2)^{-1}$

16. $\frac{x^{-3}}{y^{-3}} \times \left(\frac{x}{y}\right)^3$