

In 1–12, evaluate the expression.

1. 3^{-3}

2. 2^{-5}

3. $\frac{1}{4^{-2}}$

4. $8^0 \cdot 2^{-3}$

5. $3^5 \cdot 3^{-4}$

6. $5^{-7} \cdot 5^9$

7. $9^{-5} \cdot 9^5$

8. $-4 \cdot (-4)^{-3}$

9. $\frac{3^0}{2^{-3}}$

10. $(2^3)^{-2}$

11. $(6^{-1})^2$

12. $(-2^3)^{-1}$

In 13–24, rewrite the expression using positive exponents.

13. x^{-8}

14. $3x^{-5}$

15. $\frac{1}{7x^{-2}}$

16. $\frac{9}{x^{-4}}$

17. $8x^{-7}y^{-8}$

18. $\frac{1}{6x^{-4}y^{-3}z^5}$

19. $\frac{3x^0}{y^{-3}}$

20. $(4x)^{-2}$

21. $(-2x)^{-4}$

22. $\frac{1}{(3x)^{-3}}$

23. $(5x)^0y^{-2}$

24. $(2x)^{-2} \cdot 3y^5$

25. Sketch the graph of $y = 3^x$.

26. Sketch the graph of $y = \left(\frac{1}{2}\right)^x$.

27. **Radium Isotope** The half-life of the radium isotope Ra^{226} is about 1620 years. If there were initially 100 grams of Ra^{226} , then the number of grams remaining after h half-life periods is $W = 100\left(\frac{1}{2}\right)^h$. Complete the table.

Half-life period, h	0	1	2	3	4	5	6
Grams, W	?	?	?	?	?	?	?