

Simplify each expression. Answers should be left as fractions (when necessary) and have positive exponents.

1.  $5^2$   
 $25$

2.  $3^3$   
 $27$

3.  $x^2x^3$   
 $x^5$

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

5.  $2^{-3}$   
 $\frac{1}{8}$

6.  $(x^2)^3$   
 $x^6$

7.  $3^23^3$   
 $3^5$   
 $\boxed{243}$

8.  $\frac{1}{x^{-3}}$   
 $x^3$

9.  $6^{-1}$   
 $\frac{1}{6}$

10.  $2x^3(x^4)$   
 $2x^7$

11.  $(2y^3)^2$   
 $4y^6$

12.  $\frac{x^5}{x^3}$   
 $x^2$

13.  $\frac{x^2}{x^3}$   
 $\frac{1}{x}$

14.  $(x^2y^3)^3$   
 $x^6y^9$

15.  $-3^2$   
 $-9$

16.  $\frac{4}{x^{-2}}$   
 $4x^2$

17.  $3^{-2}$   
 $\frac{1}{9}$

18.  $(-3)^2$   
 $9$

19.  $(-2)^3$   
 $-8$

20.  $5^0$   
 $1$

21.  $\frac{t^{-3}}{-2}$   
 $\frac{1}{-2t^3}$

22.  $8^{-1}$   
 $\frac{1}{8}$

23.  $5^{-2}$   
 $\frac{1}{25}$

24.  $\frac{1}{3^{-1}}$   
 $3$

25.  $8^{-2}$   
 $\frac{1}{64}$

26.  $x^5x^{-2}$   
 $x^3$

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

28.  $(x^3)^{-2}$

$$\frac{1}{x^6}$$

29.  $\frac{(x^2x^4)}{x^5}$

$$x$$

30.  $(2x^{-2})^3$

$$\frac{8}{x^6}$$

31.  $(2x^{-2})^{-3}$

$$\frac{x^6}{8}$$

32.  $(3^2)(2^3)$

$$9 \times 8$$

$$\boxed{72}$$

33.  $5^7 5^{-5}$

$$25$$

34.  $(2x^3)(3xy^2)$

$$6x^4y^2$$

35.  $\frac{x^{-4}}{x^{-2}}$

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

36.  $\frac{n^4}{2n^{-3}}$

$$\frac{n^7}{2}$$

37.  $\frac{2y^{-3}}{y^{-7}}$

$$2y^4$$

38.  $3x^{-3}$

$$\frac{3}{x^3}$$

39.  $\left(\frac{2}{3}\right)^{-1}$

$$\frac{3}{2}$$

40.  $\left(\frac{3}{2}\right)^3$

$$\frac{27}{8}$$

41.  $\left(\frac{4}{9}\right)^{-2}$

$$\frac{81}{16}$$

42.  $(2x^{-3}y^2)^{-2}$

$$\frac{x^6}{4y^4}$$

43.  $(2c^{-1})^{-1}$

$$\frac{c}{2}$$

44.  $(s^{-3})^{-1}$

$$s^3$$

45.  $\frac{x^{-3}}{x^4}$

$$\frac{1}{x^7}$$

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

$$\frac{y^3}{x^6}$$

47.  $\frac{y^{-3}x^2}{y^4x^{-3}}$

$$\frac{x^5}{y^7}$$

48.  $\frac{1}{x^2y^{-3}}$

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