

**Exercise 19**

Let  $a$  and  $b$  be numbers. Use the distributive law to simplify the expression of the following number:

$$b(a + b) =$$

**Exercise 20**

Let  $a$  and  $b$  be numbers. Use the distributive law to simplify the expression of the following number:

$$a + b(a + b) =$$

In general, if  $x$  is nonzero and  $m, n$  are positive integers, then

$$\frac{x^m}{x^n} = x^{m-n}, \text{ if } m > n.$$

**Exercise 21**

$$\frac{7^9}{7^6} =$$

**Exercise 23**

$$\frac{8^9}{8^2} =$$

**Exercise 22**

$$\frac{-5^{16}}{-5^7} =$$

**Exercise 24**

$$\frac{13^5}{13^4} =$$

**Exercise 25**

Let  $a, b$  be nonzero numbers. What is the following number?

$$\frac{\frac{a^9}{b}}{a^2 \cdot \frac{1}{b}} =$$

**Exercise 26**

Let  $x$  be a nonzero number. What is the following number?

$$\frac{x^5}{x^4} =$$

Can the following expressions be simplified? If yes, write an equivalent expression for each problem. If not, explain why not.

**Exercise 27**

$$\frac{2^7}{4^2} = \frac{2^7}{2^4} =$$

**Exercise 29**

$$\frac{3^5 \cdot 2^8}{3^2 \cdot 2^3} =$$

**Exercise 28**

$$\frac{3^{23}}{27} = \frac{3^{23}}{3^3} =$$

**Exercise 30**

$$\frac{-2^7 \cdot 95^5}{-2^5 \cdot 95^4} =$$

**Exercise 31**

Let  $x$  be a number. Simplify the expression of each of the following numbers:

a.  $\frac{5}{x^3} 3x^8 =$

b.  $\frac{5}{x^3} -4x^6 =$

c.  $\frac{5}{x^3} 11x^4 =$

**Exercise 32**

Anne used an online calculator to multiply  $2,000,000,000 \times 2,000,000,000,000$ . The answer showed up on the calculator as  $4e + 21$ , as shown below. Is the answer on the calculator correct? How do you know?

2000000000 × 2000000000000 =

4e+21

Rad		x!	(	)	%	AC
Inv	sin	ln	7	8	9	÷
π	cos	log	4	5	6	×
e	tan	√	1	2	3	-
Ans	EXP	x <sup>y</sup>	0	.	=	+