

5.4

Additive Law of Exponents

• Example 1

(a) $a^5 \cdot a^7 = a^{5+7} = a^{12}$

(b) $x \cdot x^8 = x^1 \cdot x^8 = x^{1+8} = x^9$ $x = x^1$

(c) $3^2 \cdot 3^4 = 3^{2+4} = 3^6$

(d) $y^2 \cdot y^3 \cdot y^5 = y^{2+3+5} = y^{10}$

(e) $x^3 \cdot y^4$ cannot be simplified. Since x may be different from y , the additive law of exponents does not apply.

• • • CHECK YOURSELF 1

Simplify.

a. $b^6 \cdot b^8$

b. $y^7 \cdot y$

c. $2^3 \cdot 2^4$

d. $a^2 \cdot a^4 \cdot a^3$

• • • CHECK YOURSELF ANSWER

1. (a) b^{14} ; (b) y^8 ; (c) 2^7 ; (d) a^9 .

5.4 Exercises

Name _____

Section _____

Date _____

A N S W E R S

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____

Simplify.

- | | |
|-------------------------------|-------------------------------|
| 1. $x^5 \cdot x^7$ | 2. $b^2 \cdot b^4$ |
| 3. $5 \cdot 5^5$ | 4. $y^6 \cdot y^4$ |
| 5. $a^9 \cdot a$ | 6. $3^4 \cdot 3^5$ |
| 7. $z^{10} \cdot z^3$ | 8. $x^7 \cdot x$ |
| 9. $p^5 \cdot p^7$ | 10. $s^6 \cdot s^9$ |
| 11. $w^5 \cdot w^2 \cdot w$ | 12. $x^5 \cdot x^4 \cdot x^6$ |
| 13. $m^3 \cdot m^2 \cdot m^4$ | 14. $r^3 \cdot r \cdot r^5$ |