

Chapter Test

Solutions in English & Spanish and tutorial videos at CollegePrepAlgebra.com

Take this test as you would take a test in class. After you are done, check your work against the answers in the back of the book.

In Exercises 1–6, simplify the expression. (Assume that no variable is zero.)

1. $x^2 \cdot x^7$

2. $(5y^7)^2$

3. $\frac{-6a^2b}{-9ab}$

4. $(3x^{-2}y^3)^2$

5. $\left(\frac{2u^2}{v^{-1}}\right)^3 \left(\frac{3v^2}{u^{-3}}\right)$

6. $\frac{(-3x^2y^{-1})^4}{6x^2y^0}$

7. (a) Write 690,000,000 in scientific notation.

(b) Write 3.14×10^{-7} in decimal notation.

8. Determine the degree and the leading coefficient of $-7x^3 + 3x^2 - 8$.

In Exercises 9–20, simplify the expression. (Assume that no variable or denominator is zero.)

9. $(5a^2 - 3a + 4) + (a^2 - 4)$

10. $(8u^3 + 3u^2 - 2u - 1) - (u^3 + 3u^2 - 2u)$

11. $6y + [2y - (3 - y^2)]$

12. $-5(x^2 - 1) + 3(4x + 7) - (x^2 + 26)$

13. $(x - 7)^2$

14. $(6b - 2)(6b + 2)$

15. $(z + 2)(2z^2 - 3z + 5)$

16. $(y + 3)(y^2 - 4)$

17. $\frac{4z^3 + z}{2z}$

18. $\frac{16x^2 - 12}{-8}$

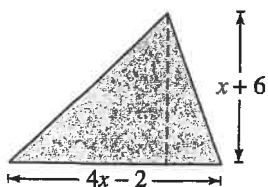


Figure for 22

22. Find an expression for the area of the triangle shown in the figure.

24. The area of a rectangle is $x^2 - 2x - 3$, and its length is $x + 1$. Find the width of the rectangle.

Chapter Test for Chapter 5

$$1. x^2 \cdot x^7 = x^{2+7} = x^9$$

$$2. (5y^7)^2 = (5)^2(y^7)^2 = 25y^{7 \cdot 2} = 25y^{14}$$

$$3. \frac{-6a^2b}{-9ab} = \frac{-6}{-9}a^{2-1}b^{1-1} = \frac{2}{3}a^1b^0 = \frac{2a}{3}$$

$$5. \left(\frac{-2u^2}{v^{-1}}\right)^3 \left(\frac{3v^2}{u^{-3}}\right) = \left(\frac{-8u^6}{v^{-3}}\right) \left(\frac{3v^2}{u^{-3}}\right) = -24u^{6-(-3)}v^{2-(-3)} = -24u^9v^5$$

$$6. \frac{(-3x^2y^{-1})^4}{6x^2y^0} = \frac{81x^8y^{-4}}{6x^2} = \frac{27x^{8-2}}{2y^4} = \frac{27x^6}{2y^4}$$

$$7. (a) 690,000,000 = 6.9 \times 10^8$$

$$(b) 3.14 \times 10^{-7} = 0.000000314$$

$$8. \text{Polynomial: } -7x^3 + 3x^2 - 8$$

$$\text{Degree: } 3$$

$$\text{Leading Coefficient: } -7$$

$$9. (5a^2 - 3a + 4) + (a^2 - 4) = 5a^2 - 3a + 4 + a^2 - 4 = 6a^2 - 3a$$

$$10. (8u^3 + 3u^2 - 2u - 1) - (u^3 + 3u^2 - 2u) = 8u^3 + 3u^2 - 2u - 1 - u^3 - 3u^2 + 2u = 7u^3 - 1$$

$$11. 6y + [2y - (3 - y^2)] = 6y + (2y - 3 + y^2) = 6y + 2y - 3 + y^2 = y^2 + 8y - 3$$

$$12. -5(x^2 - 1) + 3(4x + 7) - (x^2 + 26) = -5x^2 + 5 + 12x + 21 - x^2 - 26 = -6x^2 + 12x$$

$$13. (x - 7)^2 = x^2 - 2(x)(7) + 7^2 = x^2 - 14x + 49$$

$$14. (6b - 2)(6b + 2) = (6b)^2 - (2)^2 = 36b^2 - 4$$

$$4. (3x^{-2}y^3)^2 = (3)^2(x^{-2})^2(y^3)^2 \\ = 9x^{-2 \cdot 2}y^{3 \cdot 2} \\ = 9x^{-4}y^6 \\ = \frac{9y^6}{x^4}$$

$$15. (z + 2)(2z^2 - 3z + 5) = 2z^3 - 3z^2 + 5z + 4z^2 - 6z + 10 \\ = 2z^3 + z^2 - z + 10$$

$$16. (y + 3)(y^2 - 4) = y^3 - 4y + 3y^2 - 12 \\ = y^3 + 3y^2 - 4y - 12$$

$$17. \frac{4z^3 + z}{2z} = \frac{4z^3}{2z} + \frac{z}{2z} = 2z^2 + \frac{1}{2}$$

$$18. \frac{16x^2 - 12}{-8} = \frac{16x^2}{-8} + \frac{-12}{-8} = -2x^2 + \frac{3}{2}$$

$$22. \text{Area of triangle} = \frac{1}{2}(\text{Base})(\text{Height}) \\ = \frac{1}{2}(4x - 2)(x + 6) \\ = (2x - 1)(x + 6) \\ = 2x^2 + 12x - x - 6 \\ = 2x^2 + 11x - 6$$

$$24. (\text{Length})(\text{Width}) = \text{Area}; \text{Width} = \frac{\text{Area}}{\text{Length}}$$

$$x + 1 \overline{) x^2 - 2x - 3} \\ \underline{x^2 + x} \\ -3x - 3 \\ \underline{-3x - 3} \\ 0$$

$$\text{Width} = \frac{x^2 - 2x - 3}{x + 1} = x - 3$$