

**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

**Simplify each radical. Assume all variables represent positive numbers.**

1)  $-27^{\frac{1}{3}}$

1) \_\_\_\_\_

2)  $8^{\frac{-2}{3}}$

2) \_\_\_\_\_

3)  $-\sqrt[4]{625}$

3) \_\_\_\_\_

4)  $\sqrt[3]{-125b^{15}}$

4) \_\_\_\_\_

5)  $\sqrt[4]{81a^4b^8}$

5) \_\_\_\_\_

6)  $\sqrt{200x^5}$

6) \_\_\_\_\_

7)  $\sqrt[3]{256x^8}$

7) \_\_\_\_\_

8)  $\sqrt[5]{-32(a-b)^{10}}$

8) \_\_\_\_\_

9)  $\frac{8\sqrt{32}}{2\sqrt{50}}$

9) \_\_\_\_\_

**Simplify each radical. Assume all variables represent positive numbers.**

10)  $\frac{\sqrt{135x^5}}{\sqrt{5x}}$

10) \_\_\_\_\_

**Rationalize the denominator.**

11)  $\sqrt{\frac{5}{6}}$

11) \_\_\_\_\_

12)  $\sqrt{\frac{3}{xy}}$

12) \_\_\_\_\_

13)  $\frac{2}{3-\sqrt{5}}$

13) \_\_\_\_\_

14)  $\frac{\sqrt{5}+2}{2\sqrt{5}-4}$

14) \_\_\_\_\_

**Rationalize the denominator.**

15)  $\frac{\sqrt[3]{7x^8}}{\sqrt[3]{18x}}$

15) \_\_\_\_\_

**Perform the indicated operations and then simplify your answer.**

16)  $(2\sqrt{3} - 3\sqrt{2})(2\sqrt{3} + 3\sqrt{2})$

16) \_\_\_\_\_

17)  $2\sqrt{72} - 5\sqrt{20} - \sqrt{98}$

17) \_\_\_\_\_

18)  $\left(\frac{6 + 3\sqrt{2}}{4}\right)\left(\frac{6 - 3\sqrt{2}}{4}\right)$

18) \_\_\_\_\_

19)  $6\sqrt{5} + 8\sqrt{20} - \sqrt{80}$

19) \_\_\_\_\_

20)  $\sqrt{40} \div \sqrt{5}$

20) \_\_\_\_\_

21)  $\sqrt[3]{6x^3} \cdot \sqrt[3]{9x^4}$

21) \_\_\_\_\_

22)  $\sqrt{\frac{100x^8}{49y^4}}$

22) \_\_\_\_\_

23)  $\left(\frac{-48a^6b^4}{-8a^3b^5}\right)^{-3}$

23) \_\_\_\_\_

24)  $(6x^{\frac{-3}{4}})(-2x^{\frac{7}{8}})$

24) \_\_\_\_\_

**Add and simplify.**

25)  $2x^{-2} + 7x^{-3}$

25) \_\_\_\_\_

**Solve.**

26)  $\sqrt{3x - 15} = 8$

26) \_\_\_\_\_

27)  $\sqrt{5x - 7} = \sqrt{x + 10}$

27) \_\_\_\_\_

28)  $2 = \frac{8}{\sqrt{5x - 4}}$

28) \_\_\_\_\_

29)  $\sqrt{4y^2 - 1} = 2y + 3$

29) \_\_\_\_\_

30)  $\sqrt[3]{f + 1} = 5$

30) \_\_\_\_\_

31)  $\sqrt{6 - x} - \sqrt{x - 2} = 2$

31) \_\_\_\_\_

32)  $3 + \sqrt{x - 6} = \sqrt{x + 9}$

32) \_\_\_\_\_

33)  $\sqrt{x+2} + \sqrt{3x+4} = 2$

33) \_\_\_\_\_

34)  $\sqrt{6x+7} - \sqrt{3x+3} = 1$

34) \_\_\_\_\_

**Answer the following questions.**

35) Multiply  
 $(\sqrt{2} - 3)(5\sqrt{3} + 4)$

35) \_\_\_\_\_

36) Multiply  
 $(5\sqrt{5})(3\sqrt{10})$

36) \_\_\_\_\_

37) Simplify  $\sqrt{4x^2 - 20x + 25}$

37) \_\_\_\_\_

**Answer the following questions.**

38) Multiply and simplify  $\sqrt{\frac{4}{y}} \cdot \sqrt{\frac{3}{x}}$

38) \_\_\_\_\_

39) Add  $x\sqrt{12x} + 3\sqrt{3x^3}$

39) \_\_\_\_\_

**Use radical notation to write the expression. Simplify if possible.**

40)  $6x^{\frac{2}{3}}$

40) \_\_\_\_\_

**Write with rational exponents.**

41)  $\sqrt[5]{7a^3}$

41) \_\_\_\_\_

**Simplify the expression. Write the answer with positive exponents.**

42)  $\left(\frac{-25x^4y^9}{-5x^6y^5}\right)^{-2}$

42) \_\_\_\_\_

**Use rational exponents to write each radical with the same index. Then simplify.**

43)  $\sqrt[3]{3} \cdot \sqrt{3}$

43) \_\_\_\_\_

44) Find the area to the nearest square foot of a triangle with sides measuring 11 feet by 11 feet by 14 feet. Use the formula  $K = \sqrt{s(s-a)(s-b)(s-c)}$  on page 446 of your book.

44) \_\_\_\_\_

## Answer Key

Testname: PRACTICE EXAM 3 CH9.TST

- 1) Answer: -3
- 2) Answer:  $\frac{1}{4}$
- 3) Answer: -5
- 4) Answer:  $-5b^5$
- 5) Answer:  $3ab^2$
- 6) Answer:  $10x^2\sqrt{2x}$
- 7) Answer:  $4x^2\sqrt[3]{4x^2}$
- 8) Answer:  $-2(a - b)^2$
- 9) Answer:  $\frac{16}{5}$
- 10) Answer:  $3x^2\sqrt{3}$
- 11) Answer:  $\frac{\sqrt{30}}{6}$
- 12) Answer:  $\frac{\sqrt{3xy}}{xy}$
- 13) Answer:  $\frac{3 + \sqrt{5}}{2}$
- 14) Answer:  $\frac{9 + 4\sqrt{5}}{2}$
- 15) Answer:  $\frac{x^2\sqrt[3]{84x}}{6}$
- 16) Answer: -6
- 17) Answer:  $5\sqrt{2} - 10\sqrt{5}$
- 18) Answer:  $\frac{9}{8}$
- 19) Answer:  $18\sqrt{5}$
- 20) Answer:  $2\sqrt{2}$
- 21) Answer:  $3x^2\sqrt[3]{2x}$
- 22) Answer:  $\frac{10x^4}{7y^2}$
- 23) Answer:  $\frac{b^3}{216a^9}$
- 24) Answer:  $-12x^{\frac{1}{8}}$
- 25) Answer:  $\frac{2x + 7}{x^3}$
- 26) Answer:  $\frac{79}{3}$

## Answer Key

Testname: PRACTICE EXAM 3 CH9.TST

27) Answer:  $\frac{17}{4}$

28) Answer: 4

29) Answer:  $\frac{-5}{6}$

30) Answer: 124

31) Answer: 2

32) Answer: 7

33) Answer: -1

34) Answer:  $\{-1, \frac{1}{3}\}$

35) Answer:  $5\sqrt{6} + 4\sqrt{2} - 15\sqrt{3} - 12$

36) Answer:  $75\sqrt{2}$

37) Answer:  $2x - 5$

38) Answer:  $\frac{2\sqrt{3xy}}{xy}$

39) Answer:  $5x\sqrt{3x}$

40) Answer:  $6\sqrt[3]{x^2}$

41) Answer:  $7\frac{1}{5}a\frac{3}{5}$

42) Answer:  $\frac{x^4}{25y^8}$

43) Answer:  $\sqrt[6]{243}$

44) Answer: 59 ft<sup>2</sup>