

Practice EXAM 3

Find the square root.

1) $-\sqrt{289}$ (one point)

1) _____

Evaluate the root, if possible.

2) $\sqrt[3]{-125}$

2) _____

Find all square roots of the number.

3) 64

3) _____

Simplify the expression. Assume that all variables represent positive real numbers. (#8-10) Two points each.

4) $\sqrt{25x^8}$

4) _____

Simplify. Assume variables represent nonnegative values.

5) $\sqrt[4]{16a^4}$

5) _____

6) $\sqrt[3]{x^{12}}$

6) _____

Rewrite using radical notation and evaluate, when possible. Assume all variables represent nonnegative values, and show only the final form of your answer.

7) $5b^{6/7}$

7) _____

Write in exponential form.

8) $\sqrt[8]{m^3}$

8) _____

9) $\frac{1}{\sqrt[4]{15^3}}$

9) _____

Use the rules of exponents to simplify.

10) $\frac{y^{9/8}}{y^{5/8}}$

10) _____

11) $(8k^3m^{-6})^{1/3}$ 11) _____

Represent the radical as a radical with a smaller root index. Assume any variables represent nonnegative values.

12) $\sqrt[6]{27}$ 12) _____

Perform the indicated operation. Write the result using a radical.

13) $\sqrt[4]{w} \cdot \sqrt[5]{w^2}$ 13) _____

14) $\frac{10\sqrt[10]{v^7}}{12\sqrt[12]{v^5}}$ 14) _____

Write the expression as a single radical.

15) $\sqrt[5]{7\sqrt{z}}$ 15) _____

Simplify. Assume the variable represents any real number.

16) $\sqrt{(z-6)^2}$ 16) _____

Find the indicated value of the function.

17) $f(x) = \sqrt{-3x+7}$, find $f(-3)$ 17) _____

Find the product and write the answer in simplest form. Assume variables represent nonnegative values.

18) $\sqrt{\frac{x^2}{14}} \cdot \sqrt{\frac{x^3}{14}}$ 18) _____

Find the quotient and write the answer in simplest form. Assume variables represent nonnegative values.

19) $\frac{20\sqrt{6}}{5\sqrt{2}}$ 19) _____

20) $\frac{15\sqrt{108z^8}}{5\sqrt{3z^4}}$ 20) _____

Simplify.

21) $7\sqrt{5} \cdot \sqrt{55} + 9\sqrt{55} \cdot \sqrt{45}$ 21) _____

Multiply the conjugates. Assume all variables have nonnegative values.

22) $(2\sqrt{x} + \sqrt{y})(2\sqrt{x} - \sqrt{y})$ 22) _____

Simplify the radicals and then find the sum or difference. Assume all variables have nonnegative values.

23) $11\sqrt[4]{x^7} - 3x\sqrt[4]{x^3}$

23) _____

24) $-\sqrt{180}$

24) _____

Simplify. Assume variables represent nonnegative values.

25) $\sqrt{75}$

25) _____

26) $\sqrt[3]{54}$

26) _____

Simplify. Assume all variables represent positive real numbers.

27) $\sqrt{54x^2y}$

27) _____

28) $\sqrt[3]{27x^4y^5}$

28) _____

Simplify. Assume that all variables represent positive real numbers.

29) $-4\sqrt{5} - 15\sqrt{5}$

29) _____

Simplify the radicals and then find the sum or difference. Assume all variables have nonnegative values.

30) $8\sqrt{108} + 10\sqrt{48} + 9\sqrt{27}$

30) _____

31) $8\sqrt[5]{m^{11}p^7} - 5m^2p\sqrt[5]{mp^2}$

31) _____

Find the product and write the answer in simplest form. Assume variables represent nonnegative values.

32) $\sqrt{15} \cdot \sqrt{48}$ 32) _____

Find the product.

33) $(-4\sqrt{3} - 5\sqrt{11})^2$ 33) _____

Multiply using FOIL. Assume all variables have nonnegative values.

34) $(3\sqrt{7} + -4\sqrt{3})(4\sqrt{5} + 5\sqrt{17})$ 34) _____

Rationalize the denominator. Assume all variables represent positive real numbers.

35) $\frac{8a}{\sqrt{7}}$ 35) _____

Rationalize the denominator. Assume variables represent non-negative values.

36) $\sqrt{\frac{18}{x}}$ 36) _____

37) $\frac{6}{3\sqrt{y}}$ 37) _____

Rationalize the denominator. Assume all variables represent positive real numbers.

38) $\frac{5}{6 - \sqrt{2}}$ 38) _____

39) $\frac{7 - \sqrt{2}}{7 + \sqrt{2}}$ 39) _____

Rationalize the denominator and simplify.

40) $\frac{7 - \sqrt{6}}{7 + \sqrt{6}}$ 40) _____

Solve.

41) $\sqrt{5q - 4} = 4$ 41) _____

42) $\sqrt{x^2 - 3x + 18} = x + 2$ 42) _____

43) $\sqrt{2x+3} = 1 + \sqrt{x+1}$ 43) _____

44) $\sqrt{2x+3} + \sqrt{4-x} = 4$ 44) _____

45) Solve. 45) _____

$$\sqrt[3]{-4-2r} + \sqrt[3]{10-5r} = 0$$

46) Use the formula $K = \sqrt{s(s-a)(s-b)(s-c)}$ to find the area of a triangle with sides a, b, and c. s is the semiperimeter that is $s = \frac{a+b+c}{2}$. Give your answer to the nearest tenth of a square inch. Find the area of a triangle that measures 12 inches by 18 inches by 22 inches. 46) _____

Solve the problem.

47) Find the skid distance after braking hard at a speed of 30 miles per hour. 47) _____
 Use the formula $S = \frac{7}{2}\sqrt{2D}$, where D represents the skid distance in feet on asphalt and S represents the speed of the car in miles per hour.

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

48) $3x^{5/6}$ 48) _____

Write with rational exponents. Then simplify if possible.

49) $\sqrt[4]{3y^9}$ 49) _____

Simplify the expression. Write the answer with positive exponents.

50) $x^{\frac{3}{5}} \cdot x^{\frac{-1}{5}}$ 50) _____

51) $\left[\frac{81x^{\frac{3}{4}}}{-9x^{\frac{1}{4}}} \right]^2$ 51) _____

52) Perform the indicated operations and express your **answer in simplest radical form.**

52) _____

$$\frac{\sqrt{3}}{\sqrt[5]{3}}$$

Answer Key

Testname: PRACTICE EXAM 3 F'07

- 1) 17
- 2) -5
- 3) ± 8
- 4) $5x^4$
- 5) 2a
- 6) x^4
- 7) $5\sqrt[7]{b^6}$
- 8) $m^{3/8}$
- 9) $15^{-3/4}$
- 10) $y^{1/2}$
- 11) $2km^{-2}$
- 12) $\sqrt{3}$
- 13) $\sqrt[20]{w^{13}}$
- 14) $\sqrt[60]{v^{17}}$
- 15) $\sqrt[35]{z}$
- 16) $|z - 6|$
- 17) 4
- 18) $\frac{x^2\sqrt{x}}{14}$
- 19) $4\sqrt{3}$
- 20) $18z^2$
- 21) $170\sqrt{11}$
- 22) $4x - y$
- 23) $8x\sqrt[4]{x^3}$
- 24) $-6\sqrt{5}$
- 25) $5\sqrt{3}$
- 26) $3\sqrt[3]{2}$
- 27) $3x\sqrt{6y}$
- 28) $3xy\sqrt[3]{xy^2}$
- 29) $-19\sqrt{5}$
- 30) $115\sqrt{3}$
- 31) $3m^2p\sqrt[5]{mp^2}$
- 32) $12\sqrt{5}$
- 33) $323 + 40\sqrt{33}$
- 34) $12\sqrt{35} + 15\sqrt{119} - 16\sqrt{15} - 20\sqrt{51}$
- 35) $\frac{8a\sqrt{7}}{7}$

Answer Key

Testname: PRACTICE EXAM 3 F'07

36) $\frac{3\sqrt{2x}}{x}$

37) $\frac{6\sqrt[3]{y^2}}{y}$

38) $\frac{30 + 5\sqrt{2}}{34}$

39) $\frac{51 - 14\sqrt{2}}{47}$

40) $\frac{55 - 14\sqrt{6}}{43}$

41) {4}

42) {2}

43) {-1, 3}

44) $3, \frac{11}{9}$

45) $\left\{\frac{6}{7}\right\}$

46) 107.9 in²

47) 36.73 ft

48) $3\sqrt[6]{x^5}$

49) $3\frac{1}{4}y^{\frac{9}{4}}$

50) $x^{\frac{2}{5}}$

51) 81x

52) $\sqrt[10]{27}$