

Simplify. Write the answer with positive exponents.

1) $(4^3)^2$

2) $\left(\frac{2}{3}\right)^4$

3) $(-4xy)^3$

Find the square root. Assume that all variables represent positive real numbers.

4) $\sqrt{9x^{10}}$

Find the cube root.

5) $\sqrt[3]{-216x^6}$

Find the root. Assume that all variables represent nonnegative real numbers.

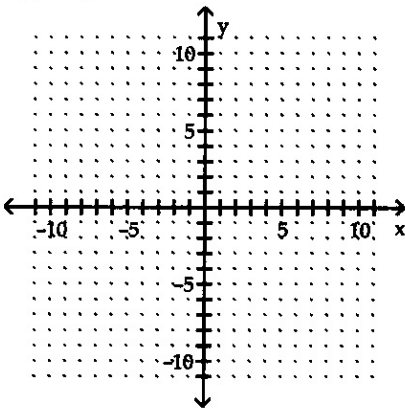
6) $\sqrt[4]{-81}$

Evaluate.

7) If $f(x) = \sqrt{2x + 3}$, find the value of $f(39)$.

Identify the domain and then graph the function.

8) $f(x) = \sqrt{x} - 1$



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

9) $16^{1/4}$

10) $3x^{1/4}$

11) $16^{5/4}$

12) $(6x)^{2/3}$

Write with positive exponents. Simplify if possible.

13) $8^{-4/3}$

Use the properties of exponents to simplify the expression. Write with positive exponents.

14) $\frac{y^{3/4}}{y^{1/4}}$

15) $y^{5/9}(y^{3/9} - 5y^{2/9})$

Use rational exponents to simplify the following.

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

Use rational exponents to write as a single radical expression.

17) $\sqrt[3]{5} \cdot \sqrt{3}$

Use the product rule to multiply. Assume all variables represent positive real numbers.

18) $\sqrt{15} \cdot \sqrt{15}$

19) $\sqrt{150} \cdot \sqrt{6}$

Use the quotient rule to divide and simplify.

20) $\sqrt{\frac{20}{49}}$

21) $\sqrt{\frac{75r^2y}{x^4}}$

Simplify the radical expression. Assume that all variables represent positive real numbers.

22) $\sqrt{6}$

23) $\sqrt[7]{x^{72}}$

Add or subtract. Assume all variables represent positive real numbers.

24) $\sqrt{100} + \sqrt{32} + \sqrt{64} + \sqrt{98}$

25) $8\sqrt[3]{3} + 2\sqrt[3]{3}$

26) $2\sqrt[4]{6} + 7\sqrt[3]{6}$

Multiply, and then simplify if possible. Assume all variables represent positive real numbers.

27) $\sqrt{5}(\sqrt{3} + \sqrt{7})$

28) $(\sqrt{8} + 3)(\sqrt{8} - 3)$

29) $(9\sqrt{3} + 8)^2$

Rationalize the denominator and simplify. Assume that all variables represent positive real numbers.

30) $\sqrt{\frac{1}{2}}$

31) $4\sqrt{\frac{625}{9 \times 19}}$

32) $\frac{6}{8 - \sqrt{3}}$

Rationalize the numerator and simplify. Assume all variables represent positive real numbers.

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

Solve.

34) $\sqrt{x+5} - 3 = 0$

35) $\sqrt{6x-11} = 3 - x$

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

Use the Pythagorean theorem to find the unknown side of the right triangle.

37)



Write in terms of i.

38) $\sqrt{-9}$

Multiply or divide.

39) $\sqrt{-2} \cdot \sqrt{-3}$

Perform the indicated operation. Write the result in the form $a + bi$.

40) $(7 + 7i) - (-9 + i)$

41) $3i(2 - 2i)$

42) $(8 - 5i)^2$

43) $\frac{5}{2i}$

44) $\frac{6}{6 - 9i}$

Find the power of i.

45) i^{27}

46) $(-6i)^5$

Solve the equation by completing the square.

47) $x^2 + 14x + 13 = 0$

48) $4x^2 + 24x + 11 = 0$

Use the quadratic formula to solve the equation.

49) $x^2 + 16x + 53 = 0$

50) $2x^2 + 10x = -5$

Use the discriminant to determine the number and type of solutions of the equation.

51) $x^2 - 3x - 1 = 0$

52) $5 - 3x^2 = -5x + 4$

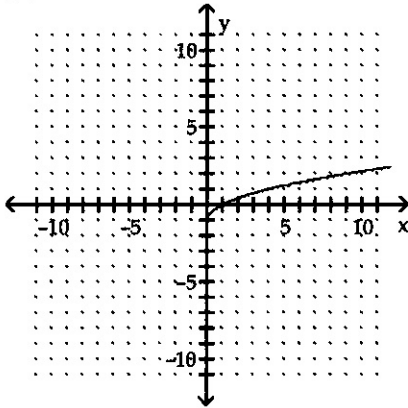
Solve.

53) A rectangular sign must have an area of 37 square yards. Its length must be 2 yards more than its width. Find the dimensions of the sign.

Answer Key

Testname: 1010 TEST 4 REVIEW

- 1) 4096
- 2) $\frac{16}{81}$
- 3) $-64x^3y^3$
- 4) $3x^5$
- 5) $-6x^2$
- 6) not a real number
- 7) 9
- 8) $[0, \infty)$



- 9) 2
- 10) $3\sqrt[4]{x}$
- 11) 32
- 12) $\sqrt[3]{36x^2}$
- 13) $\frac{1}{16}$
- 14) $y^{1/2}$
- 15) $y^{8/9} - 5y^{7/9}$
- 16) $x^{1/2}$
- 17) $\sqrt[6]{675}$
- 18) 15
- 19) 30
- 20) $\frac{2\sqrt{5}}{7}$
- 21) $\frac{5r\sqrt{3y}}{x^2}$
- 22) $\sqrt{6}$
- 23) $x^{10}\sqrt[7]{x^2}$
- 24) $11\sqrt{2} + 18$
- 25) $10\sqrt[3]{3}$
- 26) $2\sqrt[4]{6} + 7\sqrt[3]{6}$

- 27) $\sqrt{15} + \sqrt{35}$
- 28) -1
- 29) $307 + 144\sqrt{3}$
- 30) $\frac{\sqrt{2}}{2}$
- 31) $\frac{5\sqrt[4]{9x^3}}{3x^5}$
- 32) $\frac{48 + 6\sqrt{3}}{61}$
- 33) $\frac{3}{\sqrt[3]{45}}$
- 34) 4
- 35) 2
- 36) \emptyset
- 37) 20
- 38) $3i$
- 39) $-\sqrt{6}$
- 40) $16 + 6i$
- 41) $6 + 6i$
- 42) $39 - 80i$
- 43) $-\frac{5}{2}i$
- 44) $\frac{4}{13} + \frac{6}{13}i$
- 45) -i
- 46) $-7776i$
- 47) -1, -13
- 48) $-\frac{1}{2}, -\frac{11}{2}$
- 49) $-8 - \sqrt{11}, -8 + \sqrt{11}$
- 50) $\frac{-5 - \sqrt{15}}{2}, \frac{-5 + \sqrt{15}}{2}$
- 51) two real solutions
- 52) two real solutions
- 53) $1 + \sqrt{38}$ yards by $-1 + \sqrt{38}$ yards