Math 100 Review 4

Use a calculator to approximate the square root to 3 decimal places. Check to see that the approximation is reasonable.

1) $\sqrt{8}$

Find the cube root.

2) $\sqrt[3]{729}$

3) $\sqrt[3]{\frac{1}{216}}$

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

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

Find the cube root.

5) $\sqrt[3]{\frac{x^{12}}{125y^6}}$

Simplify. Assume that all variables represent any real number.

6) $\sqrt[5]{(-2)^5}$

7) $\sqrt[5]{x^5}$

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

8) $-\sqrt[4]{1296x^{12}y^8}$

Simplify. Assume that all variables represent any real number.

9) $\sqrt[4]{x^4}$

10) $\sqrt{(x-3)^2}$

Evaluate.

11) If $f(x) = \sqrt{2x+1}$, find the value of f(1).

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

12) $-243^{1/5}$

13) $(8x^9)^{1/3}$

14) $(-343x^{15})^{1/3}$

15) $243^{4/5}$

16) $27^{4/3}$

Write with positive exponents. Simplify if possible.

17) $64^{-4/3}$

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

18) $(3x)^{3/10}$

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

19) $(r^{1/7} \cdot s^{1/7})^2$

20) $\dfrac{y^{3/4}}{y^{1/4}}$

Write with positive exponents. Simplify if possible.

21) $\dfrac{1}{x^{-2/7}}$

Use rational exponents to simplify the following.

22) $\sqrt[6]{64x^3}$

Write with positive exponents. Simplify if possible.

23) $243^{-4/5}$

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

24) $\sqrt{175} \cdot \sqrt{7}$

25) $\sqrt[3]{8m^3} \cdot \sqrt[3]{27m^3}$

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

26) $\sqrt{48}$

Use the quotient rule to divide and simplify.

27) $\sqrt{\dfrac{8x^2y}{49}}$

28) $\dfrac{\sqrt{18x^9}}{\sqrt{2x}}$

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

29) $\sqrt{y^{13}}$

30) $\sqrt[5]{243\,x^3\,y^{24}}$

31) $\sqrt{45}$

32) $\dfrac{\sqrt{56x^5y^6}}{\sqrt{2y^4}}$

33) $\dfrac{\sqrt[5]{77}}{\sqrt[5]{7}}$

Find the distance between the pair of points.

34) (3, 7) and (–7, –4)

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

35) $\sqrt[3]{-27a^{11}b^{13}}$

Use the quotient rule to divide and simplify.

36) $\sqrt[3]{\dfrac{x^2}{625}}$

Find the midpoint of the line segment whose endpoints are given.

37) (–3, –3), (0, 4)

Find the distance between the pair of points.

38) (–4, –7) and (7, –5)

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

39) $-9\sqrt{2} - 4\sqrt{50}$

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

40) $\sqrt[3]{\dfrac{4}{9}}$

41) $\dfrac{7}{\sqrt[3]{13}}$

42) $\sqrt[4]{\dfrac{81}{4x^9}}$

43) $\dfrac{3}{5-\sqrt{3}}$

44) $\frac{7}{\sqrt{x} + 6}$

Solve.

45) $\sqrt{2x + 2} = 6$

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

46) $\frac{2}{5 + i}$

Find the power of i.

47) i^{36}

48) i^{51}

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

49) $\frac{4 + 2i}{4 - 7i}$

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

50) $\frac{\sqrt{6}}{\sqrt{7x}}$

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

51) $(5 + 4i)^2$

52) $(3i)(4i)$

53) $3i(9 - 6i)$

54) $(2 - 7i) - (2 - i)$

55) $(5 - 7i) + (2 + 3i)$

Multiply or divide.

56) $\frac{\sqrt{12}}{\sqrt{-6}}$

57) $\sqrt{-9} \cdot \sqrt{-2}$

Write in terms of i.

58) $\sqrt{-4}$

Solve.

59) $\sqrt{3x + 6} + 4 = 0$

60) $\sqrt{x} - 3 = \sqrt{x + 21}$

61) $\sqrt[3]{2x} = -3$

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

62) $\frac{2}{\sqrt{2} - 9}$

63) $\frac{\sqrt{5}}{\sqrt{2}}$

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

64) $14\sqrt[3]{2} - 3\sqrt[3]{54}$

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

65) $(6 + \sqrt[3]{3})(6 - \sqrt[3]{3})$

66) $(\sqrt{12} + 2)(\sqrt{12} - 2)$

67) $\sqrt{7}(\sqrt{14} + \sqrt{7})$

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

68) $5\sqrt[3]{a} + \sqrt[3]{27a}$

69) $\sqrt{6x^2} + 7\sqrt{96x^2} + 6\sqrt{96x^2}$

Use the quotient rule to divide and simplify.

70) $\sqrt{\frac{32}{25}}$

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

71) $\sqrt[5]{3x^4} \cdot \sqrt[5]{10{,}000}$

72) $\sqrt{11x^3} \cdot \sqrt{11x^5}$

Use rational exponents to write as a single radical expression.

73) $\frac{\sqrt[4]{y}}{\sqrt[5]{y}}$

74) $\sqrt[5]{5} \cdot \sqrt[3]{2}$

75) $\sqrt[9]{x} \cdot \sqrt[3]{x^2}$

Use rational exponents to simplify the following.

76) $\sqrt[8]{y^{14}z^8}$

77) $\sqrt[24]{y^{18}z^{20}}$

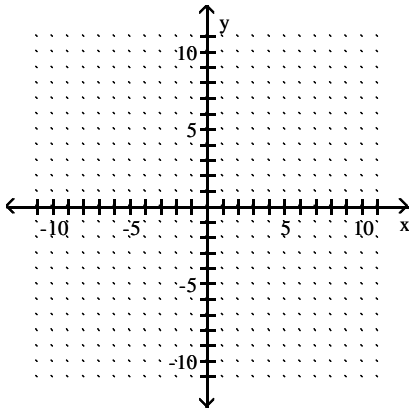
Use the properties of exponents to simplify the expression. Write with positive exponents.

78) $\dfrac{(-3x^{1/5})^4}{x^{5/7}}$

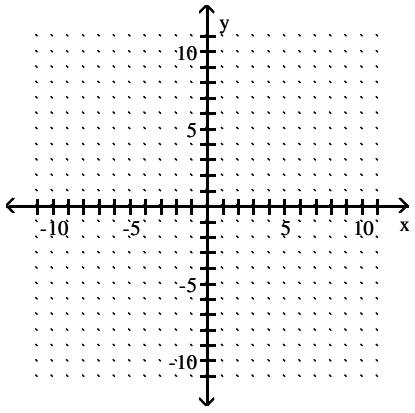
79) $y^{5/9}(y^{3/9} - 2y^{2/9})$

Identify the domain and then graph the function.

80) $f(x) = \sqrt[3]{x} - 5$



81) $f(x) = \sqrt{x} - 4$



Simplify. Assume that all variables represent any real number.

82) $\sqrt{x^2 - 4x + 4}$

Find the cube root.

83) $\sqrt[3]{-27x^{18}y^{24}}$

1) 2.828
2) 9
3) $\frac{1}{6}$
4) –5
5) $\frac{x^4}{5y^2}$
6) –2
7) x
8) $-6x^3y^2$
9) $|x|$
10) $|x - 3|$
11) $\sqrt{3}$
12) –3
13) $2x^3$
14) $-7x^5$
15) 81
16) 81
17) $\frac{1}{256}$
18) $\sqrt[10]{27x^3}$
19) $r^{2/7}s^{2/7}$
20) $y^{1/2}$
21) $x^{2/7}$
22) $2x^{1/2}$
23) $\frac{1}{81}$
24) 35
25) $6m^2$
26) $4\sqrt{3}$
27) $\frac{2x\sqrt{2y}}{7}$
28) $3x^4$
29) $y^6\sqrt{y}$
30) $3y^4\sqrt[5]{x^3\,y^4}$
31) $3\sqrt{5}$
32) $2x^2y\sqrt{7x}$
33) $\sqrt[5]{11}$
34) $\sqrt{221}$ units
35) $-3a^3b^4\sqrt[3]{a^2b}$

36) $\frac{\sqrt[3]{x^2}}{5\sqrt[3]{5}}$

37) $\left(-\frac{3}{2}, \frac{1}{2}\right)$

38) $5\sqrt{5}$ units

39) $-29\sqrt{2}$

40) $\frac{\sqrt[3]{12}}{3}$

41) $\frac{7\sqrt[3]{169}}{13}$

42) $\frac{3\sqrt[4]{4x^3}}{2x^3}$

43) $\frac{15 + 3\sqrt{3}}{22}$

44) $\frac{-42 + 7\sqrt{x}}{x - 36}$

45) 17

46) $\frac{5}{13} - \frac{1}{13}i$

47) 1

48) $-i$

49) $\frac{2}{65} + \frac{36}{65}i$

50) $\frac{6}{\sqrt{42x}}$

51) $9 + 40i$

52) -12

53) $18 + 27i$

54) $-6i$

55) $7 - 4i$

56) $-i\sqrt{2}$

57) $-3\sqrt{2}$

58) $2i$

59) $\emptyset$

60) $\emptyset$

61) $-\frac{27}{2}$

62) $-\frac{2\sqrt{2} + 18}{79}$

63) $\frac{\sqrt{10}}{2}$

64) $5\sqrt[3]{2}$

65) $36 - \sqrt[3]{9}$

66) 8

67) $7\sqrt{2} + 7$

68) $8\sqrt[3]{a}$

69) $53x\sqrt{6}$

70) $\frac{4\sqrt{2}}{5}$

71) $\sqrt[5]{30{,}000x^4}$

72) $11x^4$

73) $\sqrt[20]{y}$

74) $\sqrt[15]{4000}$

75) $\sqrt[9]{x^7}$

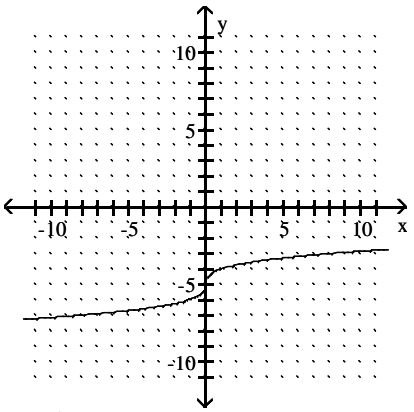
76) $y^{7/4}z$

77) $y^{3/4}z^{5/6}$

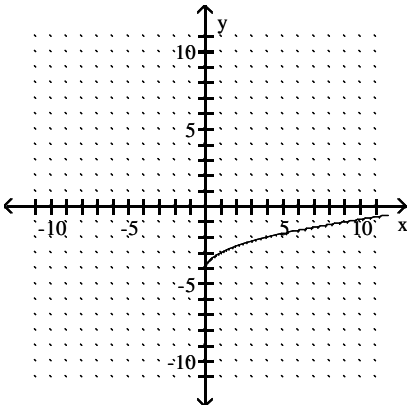
78) $81x^{3/35}$

79) $y^{8/9} - 2y^{7/9}$

80) $(-\infty, \infty)$



81) $[0, \infty)$



82) $|x - 2|$
83) $-3x^6y^8$