Lista de Exercícios

Fazer apenas números pares.

Section A.1 Follow-up Exercises

In Exercises 1–12, place an inequality symbol ($<$ or $>$) between the two given numbers to indicate the appropriate inequality relationship.

1 10_____6

2 8_____3

3 -1_____-4

4 2_____-3

5 20_____10

6 -5_____-2

7 -10_____-15

8 5_____0

9 -3_____0

10 0_____-2

11 1_____-1

12 3_____1

13 $|-5| =$

14 $|-3| =$

15 $|-5 - 10| =$

16 $|-10 + 5| =$

17 $|16| =$

18 $|2| =$

19 $|10 - (4 - 3)| =$

20 $|-5 - (-5 + 2)| =$

Fazer apenas exercícios múltiplos de 3.

Section A.2 Follow-up Exercises

In Exercises 1–12, express the indicated operations using exponents.

1 $(5)(5)(5)(5)$

2 $(-1)(-1)(-1)(-1)(-1)(-1)(-1)$

3 $(3)(3)(-2)(-2)(-2)$

4 $(7)(7)(7)/[(3)(3)]$

5 $(-x)(-x)(-x)$

6 $aaa/(bb)$

7 $aabbbcc$

8 $xxyyyy/(zzz)$

9 $xxxx/yyzzzz$

10 $ppqqq/rrrrss$

11 $(xy)(xy)(xy)(xy)$

12 $(abc)(abc)(abc)/(3)(3)(3)(3)(3)$

In Exercises 13–32, perform the indicated operations.

13 $(2)^3(2)^4$

14 $(3)^3(3)^2$

15 x^3x^5

16 yy^4y^3

17 $x^2y^3x^3y$

18 aa^3a^2a

19 $(x^2)^3$

20 $(a^2)^5$

21 $(x^3)^2(x^2)^4$

22 $a^3(a^3)^4$

23 $[(a^2)^3]^2$

24 $[(-1)^4]^3$

25 $(3x^2)^3$

26 $(5a^3)^2$

27 $(2m^3)^2$

28 $(4b^4)^3$

29 $12(a^2)^4(b)^3$

30 $2(2x^2)^3(3y^3)^2$

31 $[(2x^2)^3]^4$

32 $[2(3a^2)^3]^2$

In Exercises 33–40, rewrite the expression, using positive exponents.

33 a^{-4}

34 $(xy)^{-2}$

35 $(\frac{1}{2})^{-3}$

36 x^{-1}

37 $(\frac{1}{3})^{-4}$

38 $(abc)^{-3}$

39 $(xy)^{-5}$

40 $(4x)^{-2}$

In Exercises 41–60, perform the indicated operation.

41 x^3/x

42 m^7/m^4

43 $(2)^5/(2)^8$

44 x^6/x^6

45 $(3)^4/(3)^3$

46 $(2x^2)^2/2(x^2)$

47 $(xy)^0$

48 $-(25x^0)^2$

49 $(x/y)^3$

50 $(\frac{4}{5})^3$

51 $(x^2/y)^4$

52 $(xy/z)^3$

53 $(a^2b/c^3)^4$

54 $(2x^2/5yz^3)^3$

55 $(3xy^2/z^3)^3$

56 $[(x^2/y)^3]^2$

57 $-5[2(x^0)^5]^2$

58 $2a^2[a^3/4b]^2$

59 $(a^2/b^3)^2(b^2/a^3)^3$

60 $(ab/c)^3(c/ab)^3$

In Exercises 61–94, perform the indicated operations.

61 $10x + 3x$

62 $5x^2 - 4x^2 + 2x^2$

63 $(5y^3 - 2y^2 + y) + (4y^2 - 5y)$

64 $(2m^2 - 3m) + (4m^2 + 2m) - (m^2 + 6)$

65 $(40x^3y^2 - 25xy^3) - (15x^3y^2)$

66 $abc - cab - 4bac$

67 $(x - 2y) - (2x - 3y) + (x - y)$

68 $(-5x)(4x^2)$

69 $(7x^3)(3xy^2)$

70 $(3x^2)(2x)(-4x^3)$

71 $(a^2)(4a^5)(-2a^3)$

72 $5x(x - 10)$

73 $(-2x^2)(x^2 - y)$

74 $2a(a^2 - 2a + 5)$

75 $x^2y(x^2 - 2xy + y^2)$

76 $(x - 5)(x + 6)$

77 $(a + b)(a + b)$

78 $(2x - 3)(2x - 3)$

79 $(a - b)(a - b)$

80 $(x + 4)(x - 4)$

81 $(x - 2)(x^2 - 4x + 4)$

82 $21x^6/(3x)$

83 $16x^2y^3/(4xy^2)$

84 $10a^4b^2/(5ab^2)$

85 $-9xy^2/(3xy^3)$

86 $25a^2bc^3/(5ab^2c^4)$

87 $(15x^2 - 24x)/(3x)$

88 $(4x^3y - 2x^2y + 8xy)/(2x)$

89 $(12a^3 - 9a^2 + 6a)/(-3a)$

90 $(3x^2yz^3 - 4xy^2z)/(-xyz)$

91 $(4x^6 + 6x^3 - 8x^2)/(2x)$

92 $(8a^3b^2c - 4a^2b^3c^2)/4a^2bc$

93 $(48x^3y^2 - 16x^2y^4 + 24xy^3)/-4xy^2$

94 $(-12x^8y^6z^2 + 28x^5y^4z^5)/(-4x^3y)$

Section A.3 Follow-up Exercises

Completely factor (if possible) the polynomials in the following exercises. Do not forget to check your answers!

1 $2ax - 8a^3$

2 $21m^2 - 7mn$

3 $4x^3y - 6xy^3 + 8x^2y^2$

4 $65a^3b^2 - 13a^2b^3$

5 $9a^3 - 15a^2 - 27a$

6 $x^2 - 8x + 12$

7 $x^2 + x + 3$

8 $x^2 + 7x + 12$

9 $p^2 + 9p - 36$

10 $x^2 - 2x - 15$

11 $r^2 - 21r - 22$

12 $x^2 - 16x + 48$

13 $x^5 + y^5$

14 $9x^2 + 12x + 4$

15 $6m^2 - 19m + 3$

16 $2x^2 - 7x - 4$

17 $8x^2 - 2x - 3$

18 $2x^3 + 4x^2 - 42x$

19 $x^4 - 81$

20 $100x^2 - 225$

21 $81x^4 - 625$

22 $10x^2 + 13x - 3$

23 $x^2 + 4$

24 $27 - 8m^3$

25 $1 + 8x^3$

26 $a^3 - 125$

27 $x^4 - x^3 - 2x^2$

28 $4x^6 - 4x^2$

29 $x^3 - 3x^2 - 40x$

30 $8 - 6x + x^2$

31 $x^5 - 4x^4 - 21x^3$

32 $x^6 - x^5$

33 $a^5b - 81ab$

34 $a^2b^3y^4 - 625a^2b^3$

35 $162uv - 2u^5v$

36 $6x^4y^3 + x^3y^3 - 5x^2y^3$

Fazer Apenas exercícios múltiplos 5

Section A.4 Follow-up Exercises

In Exercises 1–25, perform the indicated operations.

1 $\frac{1}{6} + \frac{5}{30}$

2 $\frac{2}{7} - \frac{4}{21}$

3 $\frac{1}{3} - \frac{5}{6} + \frac{5}{12}$

4 $\frac{4}{25} - \frac{3}{10} + \frac{7}{6}$

5 $\dfrac{1}{x} - \dfrac{2}{x^2}$

6 $\dfrac{5}{2a} + \dfrac{6}{a^3}$

7 $\dfrac{5x}{x^2 - 4} + \dfrac{x}{x - 2}$

8 $\dfrac{5}{1} + \dfrac{1}{x}$

9 $\dfrac{10}{1} - \dfrac{2}{x^2}$

10 $\dfrac{4}{a} + \dfrac{3}{2ab}$

11 $\dfrac{3a}{a + 1} - \dfrac{5}{a^2 + 2a + 1}$

12 $\frac{3}{11} \cdot \frac{33}{6}$

13 $(\frac{1}{5})(\frac{10}{3})(-\frac{9}{2})$

14 $\left(\dfrac{1}{x}\right)\left(\dfrac{2x^3}{3}\right)\left(\dfrac{6}{5}\right)$

15 $\left(\dfrac{ab}{c}\right)\left(\dfrac{c^2}{3a^2b}\right)\left(\dfrac{1}{abc}\right)$

16 $\left(\dfrac{5}{x - 4}\right)\left(\dfrac{x^2 - 16}{10}\right)\left(\dfrac{x + 4}{2}\right)$

17 $\frac{7}{27} \div \frac{5}{9}$

18 $3x^2/5 \div x/5$

19 $a^2b/(5c) \div 3c^2/(10ab)$

20 $abc/8 \div 3a^2b/4$

21 $\dfrac{x-1}{x^2-5x-4} \div \dfrac{x-1}{x-4}$

22 $\dfrac{1-2/(3x)}{3/x+4}$

23 $\dfrac{x^2-1}{x^2} \div \dfrac{x-1}{x^3}$

24 $\dfrac{x^2+x-6}{x^2+x-2} \div \dfrac{x^2-9}{x^2-1}$

25 $\left[\dfrac{x^2+x-2}{x^2+x-6} \div \dfrac{x^2+7x+10}{x^2-x-2}\right] \cdot \dfrac{x^2+x-6}{x^2+3x+2}$

Section A.5 Follow-up Exercises

In Exercises 1–14, perform the indicated operations.

1 $a^{3/2} \cdot a^{4/3}$

2 $b^{1/6} \cdot b^{1/4}$

3 $x^{1/3} \cdot x^{2/5} \cdot x^{3/10}$

4 $(x^{1/2})^{2/3}$

5 $(a^{3/2})^{5/6}$

6 $(2x^{3/4})^4$

7 $(-3x^{2/3})^3$

8 $x^{5/2}/x^{1/2}$

9 $a^{3/2}/a^{1/6}$

10 $(x^4y^2)^{1/2}$

11 $(x^{2/3} \cdot x^{4/5})^2$

12 $(a^6b^{15})^{1/3}$

13 $(x^{2/5} \cdot x^{1/3}) \div x^{3/5}$

14 $(2a^{2/3})^5 \div 4a^{1/3}$

In Exercises 15–28, determine the principal nth root.

15 $\sqrt{625}$

16 $\sqrt[4]{625}$

17 $\sqrt[3]{-a^3}$

18 $\sqrt[5]{-1}$

19 $\sqrt[3]{-8x^6}$

20 $\sqrt[3]{27a^9}$

21 $\sqrt{144x^6}$

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

23 $\sqrt[4]{16a^8b^4}$

24 $\sqrt[3]{x^{12}y^{21}}$

25 $\sqrt[5]{a^{15}b^5c^{30}}$

26 $\sqrt[5]{-32x^{20}y^{40}}$

27 $\sqrt[4]{1296a^8}$

28 $\sqrt{900a^2b^6c^4}$

In Exercises 29–44, simplify the radical expressions.

29 $2\sqrt{7}+3\sqrt{7}$

30 $5\sqrt{x}-3\sqrt{x}$

31 $\sqrt{32}+3\sqrt{2}$

32 $2\sqrt{45}-2\sqrt{5}$

33 $4\sqrt{x}-\sqrt{x^3}$

34 $\sqrt{20}-2\sqrt{5}+3\sqrt{45}$

35 $\sqrt{2}\sqrt{8}$

36 $\sqrt[3]{5}\sqrt[3]{10}\sqrt[3]{5}$

37 $\sqrt{\tfrac{64}{9}}$

38 $\sqrt[3]{-\tfrac{1}{27}}$

39 $\sqrt{625x^2/(49y^4)}$

40 $\sqrt[4]{1/(81a^8)}$

41 $\sqrt[3]{\dfrac{64x^6}{27y^9}}$

42 $\sqrt[4]{10}\sqrt[4]{100}\sqrt[4]{10}$

43 $\dfrac{\sqrt{2}\sqrt{8}\sqrt{4}}{\sqrt[3]{32}\sqrt[3]{2}}$

44 $\dfrac{\sqrt{x^3y^5}\sqrt{xy^3}}{\sqrt[4]{x^7y^2}\sqrt[4]{xy^6}}$

In Exercises 45–56, express the term in radical form.

45 $x^{2/3}$

46 $x^{1/5}$

47 $(ab)^{3/5}$

48 $(xy)^{3/4}$

49 $x^{-1/2}$

50 $a^{-2/3}$

51 $(8)^{-1/3}$

52 $(32)^{-1/5}$

53 $a^{3/5}$

54 $(x+y)^{2/3}$

55 $(100-x)^{1/4}$

56 $(64x^{12}y^{24})^{1/6}$

In Exercises 57–68, express the term using fractional exponents.

57 $\sqrt{45x}$

58 $\sqrt[3]{a^2}$

59 $\sqrt[4]{x^3}$

60 $\sqrt{xy}$

61 $\sqrt[3]{x^5}$

62 $\sqrt[5]{(ab)^3}$

63 $\sqrt{x^4}$

64 $\sqrt[3]{(-1)^9}$

65 $\sqrt{x+y}$

66 $\sqrt[3]{(x-y)^2}$

67 $\sqrt[4]{(3-x)^3}$

68 $\sqrt[5]{(x-2x+y)^2}$