

Chapter 9 & 10 Practice.

The following is an aid to study for the Chapter 9 & 10 exam.

Disclaimer: The actual exam is different. You do need to show work on the actual exam and will not be given credit for questions where work is incorrect.

Solve algebraically.

1) $7 - a \geq -4$ 1) _____

Solve algebraically. Write answer in set builder or interval notation.

2) $4m - 15 \geq 9m - 7$ 2) _____

3) $-4(x + 4) - 22x < -6(4x - 9) - 3x$ 3) _____

Find the domain of the function. Write answer in set builder or interval notation.

4) $f(x) = \sqrt{6 - x}$ 4) _____

Find the domain of the function.

5) $f(x) = \sqrt{5 - 9x}$ 5) _____

Find the indicated intersection or union.

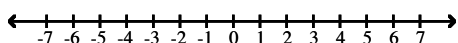
6) Let $A = \{q, s, u, v, w, x, y, z\}$, $B = \{q, s, y, z\}$, $C = \{v, w, x, y, z\}$, and $D = \{s\}$. List the elements in the set $A \cap B$. 6) _____

7) Let $A = \{q, s, u, v, w, x, y, z\}$, $B = \{q, s, y, z\}$, $C = \{v, w, x, y, z\}$, and $D = \{s\}$. List the elements in the set $A \cap D$. 7) _____

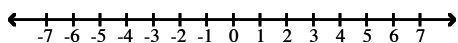
8) Let $A = \{q, s, u, v, w, x, y, z\}$, $B = \{q, s, y, z\}$, $C = \{v, w, x, y, z\}$, and $D = \{s\}$. List the elements in the set $C \cup B$. 8) _____

Graph and write interval notation for the compound inequality.

9) $-1 < x < 3$ 9) _____

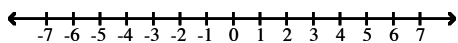


10) $x \geq 2$ and $x \geq -3$ 10) _____

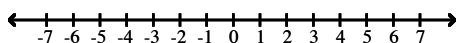


Solve the inequality and graph the solution set.

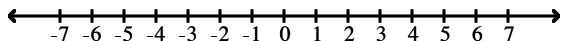
11) $6x - 4 < 2x$ or $-3x \leq -9$ 11) _____



12) $-7x + 1 \geq 15$ or $5x + 3 \geq -17$ 12) _____



13) $7 \leq 2t + 3 \leq 13$



13) _____

Solve the equation.

14) $|3m + 2| + 7 = 10$

14) _____

15) $|b| = -15$

15) _____

16) $|7m + 5| = 9$

16) _____

17) Let $f(x) = |2x - 3|$. Find all x for which $f(x) = -4$.

17) _____

18) Let $f(x) = \left| \frac{4 - 5x}{9} \right|$. Find all x for which $f(x) = 3$.

18) _____

19) $\left| \frac{1}{2}n + 2 \right| = \left| \frac{3}{4}n - 2 \right|$

19) _____

20) $|n + 8| = |4 - n|$

20) _____

Solve the absolute-value inequality. Write solution in set builder or interval notation.

21) $|5 - x| \geq 6$

21) _____

22) $|8k + 2| + 3 < 10$

22) _____

Solve the absolute-value inequality.

23) $|2y - 3| - 5 < -11$

23) _____

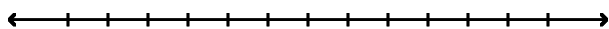
24) $|b - 4| - 3 > 14$

24) _____

Solve and graph.

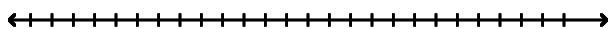
25) $|7k + 4| \leq 9$

25) _____



26) $|x - 7| + 3 \leq 7$

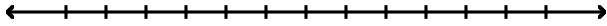
26) _____



27) $|x - 3| > 15$

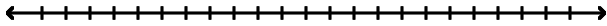
27) _____

28) $|7k - 1| - 6 > -2$



28) _____

29) $|2x - 5| > 0$



29) _____

Find the requested solution.

30) Let $f(x) = |-4x - 5|$. Find all x for which $f(x) \geq -3$.

30) _____

31) Let $f(x) = 7 + |7x + 2|$. Find all x for which $f(x) < 18$.

31) _____

Choose the ordered pair which is a solution of the inequality.

32) $2x + 3y \leq 5$

A) (1, 1)

B) (3, 2)

C) (1, 2)

D) (0, 2)

32) _____

33) $2x + 4y > 8$

A) (2, 2)

B) (2, 1)

C) (0, 0)

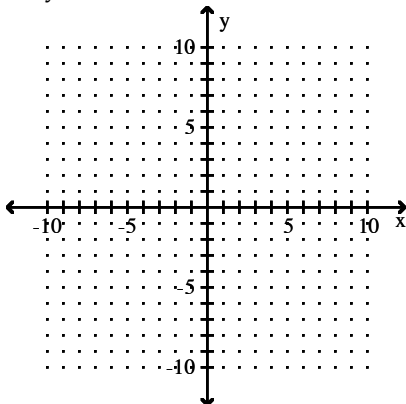
D) (0, 1)

33) _____

Graph on a plane.

34) $x - y > -5$

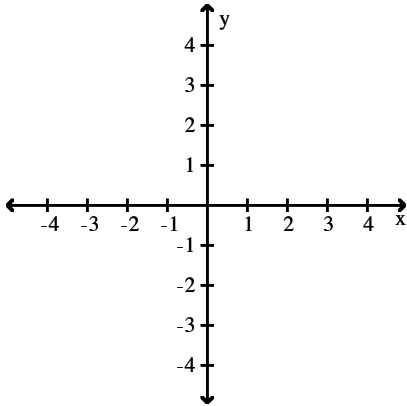
34) _____



Graph the system of linear inequalities.

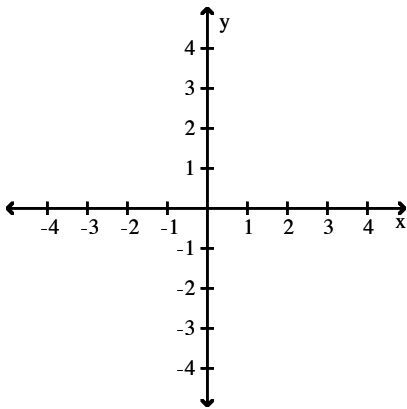
35) $2x + y \leq 4$ and $x - 1 > 0$

35) _____



36) $2x + y \leq 4$ and $y - 1 < 0$

36) _____



Find all square roots of the number.

37) 289

37) _____

Simplify.

38) $\sqrt{\frac{225}{529}}$

38) _____

39) $-\sqrt{\frac{289}{49}}$

39) _____

Simplify. Assume that variables can represent any value.

40) $\sqrt{25y^2}$

40) _____

41) $-\sqrt{x}14$

41) _____

Simplify. Unless otherwise specified, assume that variables can represent any number.

42) $\sqrt[3]{-\frac{64}{125}}$ 42) _____

43) $\sqrt[11]{(x-6)^{11}}$ 43) _____

Simplify. Assume all variables represent nonnegative values.

44) $\sqrt[4]{81a^4}$ 44) _____

45) $\sqrt{4x^2+8x+4}$ 45) _____

46) $\sqrt[4]{256x^4}$ 46) _____

Use the laws of exponents to simplify. Do not use negative exponents in the answer. Assume that even roots are of nonnegative quantities and that all denominators are nonzero.

47) $\frac{y^{3/4}}{y^{1/4}}$ 47) _____

48) $\frac{7^{11/13}}{7^{-6/13}}$ 48) _____

49) $z^{-2/7} \cdot z^{3/7}$ 49) _____

50) $(9k^2m^{-4})^{1/2}$ 50) _____

51) $(8a^{1/7}b^{5/7})^3$ 51) _____

Multiply.

52) $\sqrt[4]{10p}\sqrt[4]{12q}$ 52) _____

Simplify by factoring.

53) $\sqrt{112}$ 53) _____

54) $\sqrt{8k^7q^8}$ 54) _____

Simplify. Assume that no radicands were formed by raising negative numbers to even powers.

55) $\sqrt[3]{512x^4y^5}$ 55) _____

56) $\sqrt[3]{-8a^8b^5}$

56) _____

Multiply and simplify. Assume all variables represent nonnegative real numbers. Write your answer in radical notation.

57) $\sqrt{14m^5}\sqrt{7m^{11}}$

57) _____

58) $\sqrt[3]{xy^5}\sqrt[3]{x^7y^{17}}$

58) _____

Simplify by taking the roots of the numerator and the denominator. Assume all variables represent positive numbers.

59) $\sqrt[3]{\frac{1296x^4}{6x}}$

59) _____

60) $\sqrt[3]{\frac{16x^4}{2x}}$

60) _____

Rationalize the denominator. Assume all variables represent positive numbers.

61)

$\sqrt[3]{\frac{7}{6}}$

61) _____

62)

$\frac{\sqrt[3]{3}}{\sqrt[3]{4}}$

62) _____

63) $\sqrt{\frac{98}{x}}$

63) _____

64) $-\sqrt{\frac{98x^3}{y^5}}$

64) _____

Add or subtract. Simplify by combining like radical terms, if possible. Assume all variables and radicands represent nonnegative numbers.

65) $6\sqrt{32} - 2\sqrt{200}$

65) _____

66) $\sqrt{2} + 7\sqrt{8} + 2\sqrt{18}$

66) _____

67) $\sqrt{x+5} + \sqrt{4x+20}$

67) _____

68) $10\sqrt[3]{2} - 5\sqrt[3]{250}$

68) _____

Multiply. Assume that all variables represent nonnegative real numbers.

69) $(\sqrt{5} + 3)(\sqrt{5} - 3)$

69) _____

70) $(\sqrt[3]{16} + 5)(\sqrt[3]{4} - 5)$

70) _____

Rationalize the denominator. Assume all variables represent positive numbers.

71) $\frac{\sqrt{6}}{\sqrt{5+6}}$

71) _____

72) $\frac{5 - \sqrt{6}}{5 + \sqrt{6}}$

72) _____

Multiply and simplify. Assume all variables represent nonnegative real numbers. Write your answer in radical notation.

73) $\sqrt{m}\sqrt[4]{m^{13}}$

73) _____

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

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

74) _____

Solve.

75) $\sqrt{3x+4} = 7$

75) _____

76) $\sqrt[3]{x+5} = 2$

76) _____

77) $8\sqrt{y} = y$

77) _____

78) $x = \sqrt{x+13} + 7$

78) _____

79) $\sqrt[4]{z+1} + 2 = 0$

79) _____

80) $\sqrt{3x+1} = 3 + \sqrt{x-4}$

80) _____

81) $y^{1/3} - 2 = 3$

81) _____

Find the length of the missing side of the right triangle. Round to three decimal places, if necessary. The legs of the right triangle are represented by a and b, and the hypotenuse is represented by c.

82) $a = 10, b = 24$

82) _____

Solve the problem. If necessary, round to the nearest tenth.

83) On a sunny day, a tree and its shadow form the sides of a right triangle. If the hypotenuse is 50 m long and the tree is 40 m tall, how long is the shadow?

83) _____

Find the distance between the pair of points. Give your answer in exact form and where appropriate find an approximation to three decimal places.

84) $(-2, -3)$ and $(6, 1)$

84) _____

85) $(-1, -4)$ and $(5, -2)$

85) _____

Find the midpoint of the segment with the given endpoints.

86) $(0, -6)$ and $(-9, 2)$

86) _____

87) $\left(-\frac{3}{2}, -\frac{11}{2}\right)$ and $\left(\frac{7}{2}, -\frac{7}{2}\right)$

87) _____

Express in terms of i.

88) $\sqrt{-64}$

88) _____

Perform the indicated operation and simplify. Write the answer in the form $a + bi$.

89) $(-6 + 4i) + (9 + 3i)$

89) _____

90) $(12 - 9i) - (4 - 4i)$

90) _____

91) $(9 + 3i) - (-4 + i)$

91) _____

92) $\sqrt{-2} \cdot \sqrt{-19}$

92) _____

93) $(6 - 2i)(3 + 8i)$

93) _____

94) $(3 - 7i)(7 - 4i)$

94) _____

95) $(4 - 2i)^2$

95) _____

96) $\frac{-2}{8 - 7i}$

96) _____

97) $\frac{-1i}{-5 + 4i}$

97) _____

98) $\frac{3+7i}{9+4i}$

98) _____

Find the power of i.

99) i^8

99) _____

100) $(-i)^4$

100) _____

Answer Key

Testname: 125CH9&10P

1) $\{a \mid a \geq 11\}$ or $[11, \infty)$

2) $\left\{m \mid m \leq -\frac{8}{5}\right\}$ or $\left(-\infty, -\frac{8}{5}\right]$

3) $\{x \mid x < 70\}$ or $(-\infty, 70)$

4) $\{x \mid x \leq 6\}$ or $(-\infty, 6]$

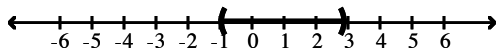
5) $\left\{x \mid x \leq \frac{5}{9}\right\}$ or $\left(-\infty, \frac{5}{9}\right]$

6) $\{q, s, y, z\}$

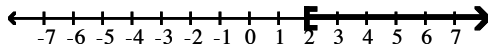
7) $\{s\}$

8) $\{q, s, v, w, x, y, z\}$

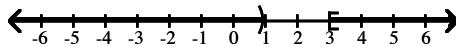
9) $(-1, 3)$



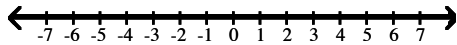
10) $[2, \infty)$



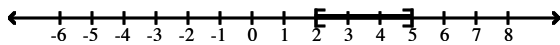
11)



12)



13)



14) $\left\{\frac{1}{3}, -\frac{5}{3}\right\}$

15) \emptyset

16) $\left\{\frac{4}{7}, -2\right\}$

17) \emptyset

18) $\left\{\frac{-23}{5}, \frac{31}{5}\right\}$

19) $\{16, 0\}$

20) $\{-2\}$

21) $(-\infty, -1] \cup [11, \infty)$

22) $\left(-\frac{9}{8}, \frac{5}{8}\right)$

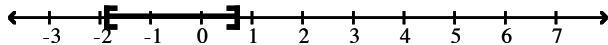
23) \emptyset

24) $(-\infty, -13) \cup (21, \infty)$

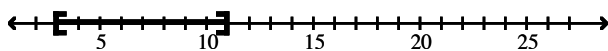
Answer Key

Testname: 125CH9&10P

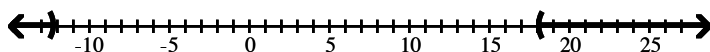
25) $\left[-\frac{13}{7}, \frac{5}{7}\right]$



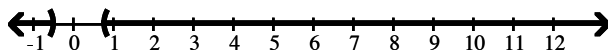
26) $[3, 11]$



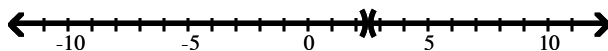
27) $(-\infty, -12) \cup (18, \infty)$



28) $\left(-\infty, -\frac{3}{7}\right) \cup \left(\frac{5}{7}, \infty\right)$



29) $\left(-\infty, \frac{5}{2}\right) \cup \left(\frac{5}{2}, \infty\right)$



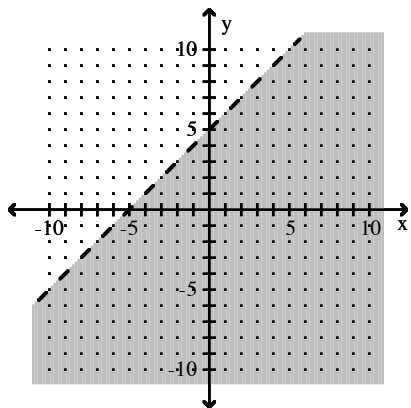
30) \mathcal{R}

31) $\left(-\frac{13}{7}, \frac{9}{7}\right)$

32) A

33) A

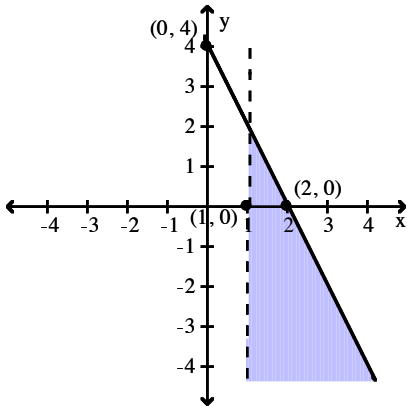
34)



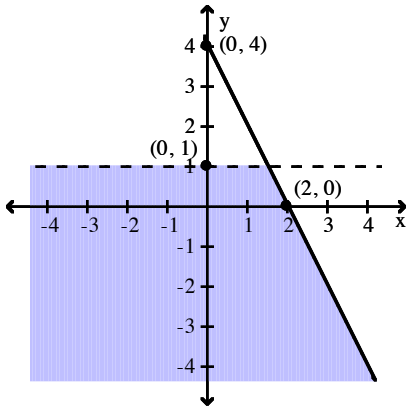
Answer Key

Testname: 125CH9&10P

35)



36)



37) 17, -17

38) $\frac{15}{23}$

39) $-\frac{17}{7}$

40) $5|y|$

41) $-|x^7|$

42) $-\frac{4}{5}$

43) $x - 6$

44) $3a$

45) $2x + 2$

46) $4x$

47) $y^{1/2}$

48) $717/13$

49) $z^{1/7}$

50) $\frac{3k}{m^2}$

51) $512a^{3/7}b^{15/7}$

Answer Key

Testname: 125CH9&10P

$$52) \sqrt[4]{120pq}$$

$$53) 4\sqrt{7}$$

$$54) (2k^3q^4)\sqrt{2k}$$

$$55) 8xy(\sqrt[3]{xy^2})$$

$$56) -2a^2b(\sqrt[3]{a^2b^2})$$

$$57) 7m^8\sqrt{2}$$

$$58) x^2y^7\sqrt[3]{x^2y}$$

$$59) 6x$$

$$60) 2x$$

$$61) \frac{\sqrt[3]{252}}{6}$$

$$62) \frac{\sqrt[3]{48}}{4}$$

$$63) \frac{7\sqrt{2x}}{x}$$

$$64) -\frac{7x\sqrt{2xy}}{y^3}$$

$$65) 4\sqrt{2}$$

$$66) 21\sqrt{2}$$

$$67) 3\sqrt{x+5}$$

$$68) -15\sqrt[3]{2}$$

$$69) -4$$

$$70) -21 - 5\sqrt[3]{16} + 5\sqrt[3]{4}$$

$$71) \frac{\sqrt{30} - 6\sqrt{6}}{-31}$$

$$72) \frac{31 - 10\sqrt{6}}{19}$$

$$73) m^3\sqrt[4]{m^3}$$

$$74) \sqrt[15]{x^7}$$

$$75) 3$$

$$76) 3$$

$$77) 0, 64$$

$$78) 12$$

Answer Key

Testname: 125CH9&10P

79) No solution

80) 5, 8

81) 125

82) $c = 26$

83) 30 m

84) $4\sqrt{5} \approx 8.944$

85) $2\sqrt{10} \approx 6.325$

86) $\left(-\frac{9}{2}, -2\right)$

87) $\left(1, -\frac{9}{2}\right)$

88) $8i$

89) $3 + 7i$

90) $8 - 5i$

91) $13 + 2i$

92) $-\sqrt{38}$

93) $34 + 42i$

94) $-7 - 61i$

95) $12 - 16i$

96) $-\frac{16}{113} - \frac{14}{113}i$

97) $-\frac{4}{41} + \frac{5}{41}i$

98) $\frac{55}{97} + \frac{51}{97}i$

99) 1

100) -1