EAST LOS ANGELES COLLEGE **NAME:**
MATH 115 (ELEMENTARY ALGEBRA) FINAL EXAM SAMPLE **VERSION:**
SPRING 2007 **INSTRUCTOR:**
SECTION:

TIME: 120 MINUTES THE SAMPLE IS LONGER THAN THE ACTUAL FINAL EXAM

Direction: A scientific calculator (not a graphing calculator) is allowed during test. Please write your answer in the answer blanks and show all work to get full credits.

Solve.

1) $7x - (4x - 1) = 2$ 1) _____

2) $-5.2q + 1.6 = -27.1 - 1.1q$ 2) _____

3) $-5x + 3(3x - 7) = -13 - 4x$ 3) _____

4) $\frac{1}{5}(4x - 8) = \frac{1}{4}(20x - 10)$ 4) _____

Solve the equation for the indicated variable.

5) $P = 2L + 2W$; L

5) _____

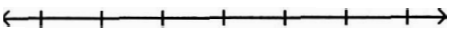
6) $A = P(1 + nr)$; r

6) _____

Solve and graph. Write the solution set in interval notation.

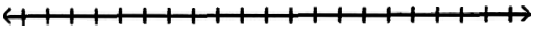
7) $8 - 3z + 1 \geq -4z + 6$

7) _____



8) $-2(y - 2) \geq 4(y + 1)$

8) _____



Solve the problem.

9) If Gloria received a 10 percent raise and is now making $27,500 a year, what was her salary before the raise? Round to the nearest dollar if necessary. 9) _____

10) The difference between two positive integers is 60. One integer is three times as great as the other. Find the integers. 10) _____

Solve.

11) Find the length of a rectangular lot with a perimeter of 126 meters if the length is 7 meters more than the width. 11) _____

12) If two planes leave an airport at the same time with one flying west at 640 miles per hour and the other flying east at 21 0 miles per hour, how long will it take them to be 3400 miles apart? 12) _____

Set up the Equation(s) and Solve.

13) A car traveling 67 miles per hour passes a bus traveling 61 miles per hour in the same direction on the highway. If they maintain their speeds, how long will it take them to be 21 miles apart? 13) _____

Solve.

14) A writer received $37,000 as royalty for her book. She invested part of the money in bonds paying 6% interest annually. The rest she invested in a life insurance policy paying 8% interest annually. If the total interest from the investments after 1 year is $2720, how much did she invest in bonds? 14) _____

Write the equation of a line connecting the given points in slope-intercept form.

15) (−8, 3), (1, −2) 15) _____

Write the equation of a line that passes through the given point and is parallel to the given line in slope-intercept form.

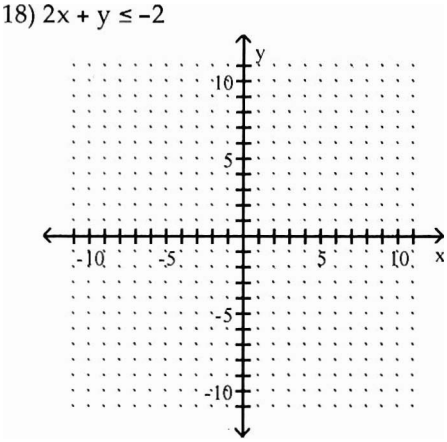
16) (1, -5); $y = 2x - 3$ 16) _____

Write the equation of a line that passes through the given point and is perpendicular to the given line in slope-intercept form.

17) (-4, -6); $y = \frac{1}{2}x + 13$ 17) _____

Graph the linear inequality.

18) $2x + y \leq -2$ 18) _____



Subtract and write the resulting polynomial in descending order.

19) $(9p^2 + 12p + 8) - (5p^2 + 4p - 2)$ 19) _____

Subtract.

20) Subtract $(5x - 29xy - 25y)$ from $(23x + 12xy - 9y)$ 20) _____

Multiply.

21) $(x + 11)(-4x - 9)$ 21) _____

Multiply.

22) $(x + 3)(x^2 - x + 8)$ 22) _____

Multiply.

23) $(4a - 11)^2$ 23) _____

Simplify. Write the answer with positive exponents.

24) $\left(\frac{3x^2}{z^4}\right)^{-3}$ 24) _____

Divide.

25) $\frac{10x^4 - 6x^3 - 5x^2}{x^2}$ 25) _____

(8 POINTS) Use long division to divide the polynomials.

26) $\frac{8x^2 + 4x - 7}{4x - 2}$ 26) _____

Use long division to divide the polynomials.

27) $\frac{z^3 - 8}{z - 2}$ 27) _____

Factor.

28) $2x^3 - 8x^2 - 6x + 24$ 28) _____

Factor.

29) $x^2 + 2x - 99$ 29) _____

30) $15x^2 + 19x + 6$ 30) _____

31) $10x^2 + 19x + 6$ 31) _____

32) $25x^2 - 81$ 32) _____

Factor completely.

33) $y^3 - 27$ 33) _____

Factor completely.

34) $x^2 - 4xy - 12y^2$ 34) _____

Solve.

35) $4x^2 - 20x + 24 = 0$ 35) _____

36) $r(r - 18) = -81$ 36) _____

Multiply.

37) $\frac{x^2 + 81}{x^2 - 2x + 1} \cdot \frac{x + 1}{x - 9}$ 37) _____

Divide.

38) $\frac{z^2 + 10z + 24}{z^2 + 11z + 30} \div \frac{z^2 + 4z}{z^2 + 2z - 15}$ 38) _____

Solve and check.

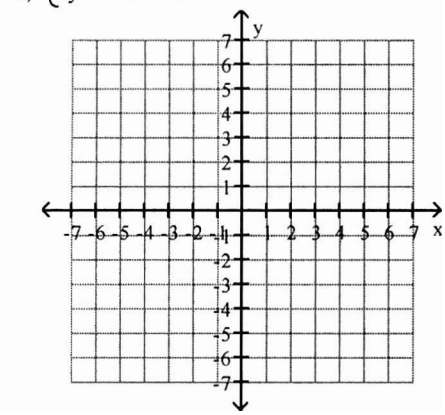
39) $\frac{3}{x + 3} = \frac{5}{x - 5}$ 39) _____

40) $\frac{x + 2}{x^2 - 1} + \frac{x - 3}{x^2 + 2x - 3} = \frac{2x - 3}{x^2 + 4x + 3}$ 40) _____

Solve the system graphically.

41) $\begin{cases} 2x - y = 4 \\ y = -3x + 1 \end{cases}$

41) _____



Solve the system of equations using substitution.

42) $\begin{cases} x - 7y = -59 \\ 6x - 8y = -48 \end{cases}$

42) _____

Solve the system of equations using the elimination method.

43) $\begin{cases} 9x - 7y = -35 \\ 2x - 4y = -20 \end{cases}$

43) _____

Solve using the quadratic formula.

44) $2x^2 + 10x + 6 = 0$ 44) _____

45) $2x^2 + 8x = -7$ 45) _____

1) $\frac{1}{3}$

2) 7

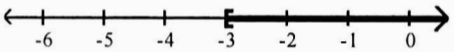
3) 1

4) -1

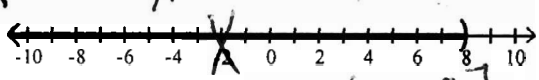
5) $L = \frac{P - 2W}{2}$

6) $r = \frac{A - P}{Pn}$

7) $\{z \mid z \geq -3\}$; $[-3, \infty)$



8) $\{x \mid x < 8\}$; $(-\infty, 8)$



9) $25,000

10) 30 and 90

11) 35 m

12) 4 hr.

13) 3.5 hr.

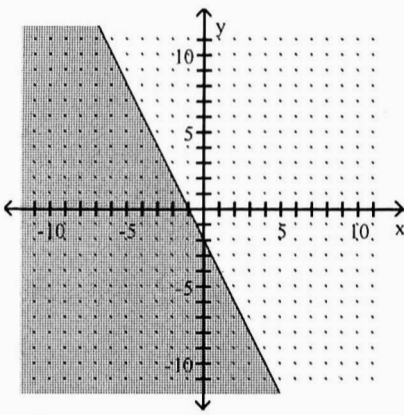
14) $12,000

15) $y = -\frac{5}{9}x - \frac{13}{9}$

16) $y = 2x - 7$
$2x - y = 7$

17) $y = -2x - 14$
$2x + y = -14$

18)



19) $4p^2 + 8p + 10$

20) $18x + 41xy + 16y$

21) $-4x^2 - 53x - 99$

22) $x^3 + 2x^2 + 5x + 24$

23) $16a^2 - 88a + 121$

24) $\frac{1}{y^{18}}$

25) $10x^2 - 6x - 5$

26) $2x + 2$

27) $z^2 + 2z + 4$

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

29) $(x + 11)(x - 9)$

30) $(3x + 2)(5x + 3)$

31) $(2x + 3)(5x + 2)$

32) $(5x + 9)(5x - 9)$

33) $(y - 3)(y^2 + 3y + 9)$

34) $(x - 6y)(x + 2y)$

35) 2, 3

36) 9

37) $\frac{(x^2 + 81)(x + 1)}{(x - 1)^2(x - 9)}$

38) $\frac{z - 3}{z}$

39) - 15

40) 0

41) (-3, 5)

42) (4, 9)

43) (0, 5)

44) $\frac{-5 \pm \sqrt{13}}{2}$

45) $\frac{-4 \pm \sqrt{2}}{2}$