Math 940

Practice Final Exam

I. Solve each system of equations. (4 points each)

In problems 1 & 2, use the addition method or the substitution method.

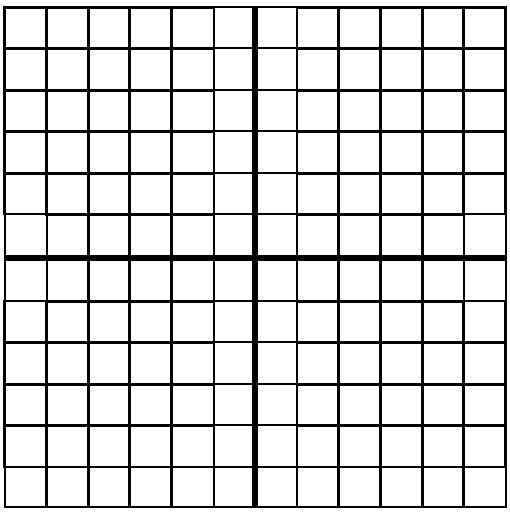
1) $\begin{cases} x - 2y = -1 \\ 12x + 11y = 23 \end{cases}$ 1)_____

2) $\begin{cases} x + 3y = 8 \\ y = 2x - 9 \end{cases}$ 2)_____

3) Solve the system by graphing. Label the coordinates of the solution. (4 points)

3)_____

$\begin{cases} x = 3 \\ 3y = -2x + 6 \end{cases}$



4) Yes or No? Determine whether the ordered pair $(3, -2)$ is a solution of the system: (3 points)

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

4) _

II. Perform the indicated operations for problems 5-17. Reduce all answers to lowest terms and write all answers without negative exponents. (2 points each)

5) $(-4x^3)^3$ 5)_____

6) $-3^0 + (-3)^0$ 6)_____

7) $\left(\frac{x^{-2}}{y^3}\right)^{-3}$ 7)_____

8) $\frac{3x^3y^2}{15x^2y^5}$ 8)_____

9) $(x^6y)(x^2y^5)$ 9)_____

10) $4(y-2)-6(y+5)$ 10)_____

11) $(x^2-7x-1)-(x^2+1)$ 11)_____

12) Evaluate the expression $-x^2+5x-1$ for

a) $x = -4$ 12a)_____ (2 pts.)

b) $x = 4$ 12b)_____ (2 pts.)

13) Find the product. $(10x+9y)(10x-9y)$ 13)_____

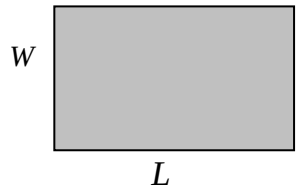
14) Find the product. $(4y-8)^2$ 14)_____

15) Find the product. $-3x^2(x^2-3x-4)$ 15)_____

16) Divide. $\dfrac{-32x^3+16x^2-4x}{4x}$ 16)_____

17) The area of a rectangle is $(x^2 - 7x - 18)\ in^2$. Find the expressions that represent the length and width in terms of x. $A = LW$

$A = (x^2 - 7x - 18)\ in^2$



17) W =_____ (1 pt.)

L =_____ (1 pt.)

III. In problems 18 – 23, factor each expression completely. If an expression cannot be factored, state that it is prime. (2 points each)

18) $16ab + 4ac - 4b - c$ 18)_____

19) $28 - 3x - x^2$ 19)_____

20) $9y^2 + 16$ 20)_____

21) $2x^2 - 7x - 4$ 21)_____

22) $5x^5 - 80x$ 22)_____

23) $2x^2 - 5xy - 3y^2$ 23)_____

IV. Solve these quadratic equations by the method of your choice. Express answers containing irrational square roots in simplified radical form or give the decimal equivalent rounded to the nearest thousandth, if necessary. (4 points each)

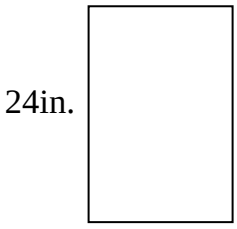
24) $x^2 + 7x = 18$ 24)_____

25) $9x^2 = 64$ 25)_____

26) $5x^2 - 8x - 3 = 0$ 26)_____

27) Use the Pythagorean Theorem to find the length of the diagonal of a piece of paper that measures 16 inches by 24 inches. Round answer to 2 decimal places if necessary. (3 points)

27)_____



V. Solve the following word problems. (5 points each)

28) Two angles are supplementary angles when the sum of their measures is 180°. If angles *A* and *B* are supplementary angles, and Angle *A* is five times as large as angle *B*, find the measure of each angle. Use systems of equations to solve.

28) Angle *A* = _____

Angle *B* = _____

29) The Meyers family had a family reunion in Texas. They purchased tickets to the Six Flags Amusement Park. The adult tickets each cost $40 and the children's each cost $30. If 27 tickets were purchased at a total cost $930, how many adult tickets and children tickets were purchased?

29) Adult: _____

Children:_____

30) A photograph has a perimeter of 36 inches. The difference between the photograph's length and width is 2 inches. Find the length and width of the photograph.

30) Length =_____

Width =_____

31) A hot-air balloonist accidentally dropped his camera overboard while traveling at a height of 6400 feet. The height *h*, in feet, of the camera *t* seconds after being dropped is given by $h = -16t^2 + 6400$. In how many seconds will the camera hit the ground?

31)_____

Math 940 Practice Exams Answers:

1) (1,1)

2) (5,1)

3) (3,0)

4) Yes

5) $-64x^9$

6) 0

7) x^6y^9

8) $\frac{x}{5y^3}$ or $\frac{1x}{5y^3}$

9) $14x^8y^6$

10) -2y-38

11) $2x^2-7x-2$

12)

a) -37

b) 3

13) $100x^2-81y^2$

14) $16y^2-64y+64$

15) $-3x^4+9x^3+12x^2$

16) $-8x^2+4x-1$

17)

a) W = x-9

b) L = x+2

18) (4b+c)(4a-1)

19) -1(x-4)(x+7)

20) Prime

21) (2x+1)(x-4)

22) $5x(x^2+4)(x+2)(x-2)$

23) (2x+y)(x-3y)

24) x=2, x=-9

25) $x = \pm\frac{8}{3}$

26) $x = \frac{4 \pm \sqrt{31}}{5}$

27) C = 28.84 inches

28)

a) Angle A = 150°

b) Angle B = 30°

29)

a) Adult: 12 tickets

b) Children: 15 tickets

30)

a) Length = 10 inches

b) Width = 8 inches

31) t = 20 seconds