Name:
Section:

Math 010: Intermediate Algebra
Fall 2011 : Exam 2A
Sections 2.3-4.5

Please circle or box your final answer. Show your work where appropriate.

Matching: Choose the equation from the right whose graph satisfies the condition described. You may use an answer more than once. Write the answer on the lines below. Each problem is worth 2 points.

1. Line whose slope is undefined.
2. Line that is horizontal.
3. Line whose x-intercept is 6.
4. Line that is perpendicular to the line $x+6y=12$
5. Line whose y-intercept is 4.

a. $2y=12$

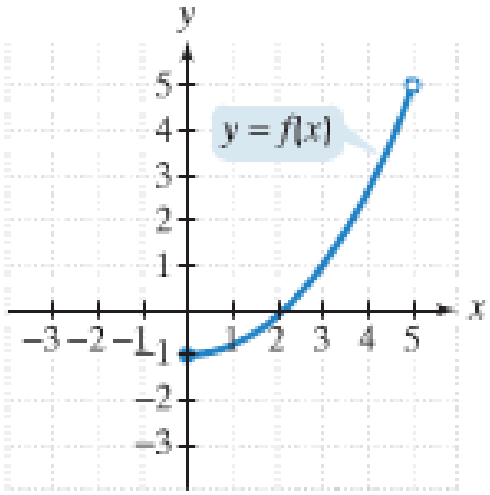
b. $-6x+y=5$

c. $x=6$

d. $12x+2y=8$

1. _____ 2. _____ 3. _____ 4. _____ 5. _____

6. Given the graph below, find the following. Use interval notation where appropriate. (2 points each → 10 points)



a. Give the domain : _____

b. Give the range: _____

c. Find $f(0)$. _____

d. Find the value(s) of x, such that $f(x) = 1$.

_____

e. Does the graph represent a function?

_____

The following Short Answer problems are worth 5 points each.

7. Explain what an inconsistent system looks like graphically, what would result algebraically when attempting to solve the system and how many solutions it would have.

Graphically:

Algebraically:

Number of Solutions: (circle)

No Solution 1 Solution Infinitely Many Solutions

8. Simplify: -4^{-2}

9. Divide: $\dfrac{8x^3+24x^2-4x}{-4x}$. (show all steps)

10. Factor out the GCF: $10x^3 + 15x^2y$

11. Factor by grouping: $15a^2 - 21a + 10a - 14$ (show all steps)

12. Translate the following problem into a system of equations. Define each variable (be specific!) and write the system. DO NOT SOLVE.

    A test has 20 questions worth 100 points. The tests consists of true/false questions worth 3 points each and multiple choice questions worth 11 points each. How many of each type of question are there?

Let x = _____

y = _____

System of equations:

_____

_____

13. Translate the following problem into a system of equations. Define each variable (be specific!) and write the system. DO NOT SOLVE.

    An airplane flying with the wind can cover 600 miles in 2 hours. The return trip against the wind takes 2.5 hours. What is the speed of the plane in still air and what is the speed of the wind?

Let x = _____

y = _____

System of equations:

_____

_____

The following 6 problems are multiple choice. Each problem is worth 5 points. Please indicate the letter of your answer on the line.

14. Given $f(x)=-x^2+2x-5$. Find $f(-1)$.

    a. -2
    b. -8
    c. -6
    d. -4
    e. None of the above.

Answer #14: _____

15. Write the equation of the line perpendicular to the line $3x+2y=6$ passing through (3, -2) .

    a. $y=\frac{2}{3}x-4$

    b. $y=\frac{2}{3}x+3$

    c. $y=\frac{2}{3}x$

    d. $y=-\frac{2}{3}x$

    e. $y=\frac{3}{2}x-\frac{13}{2}$

Answer #15 : _____

16. Simplify: $\left(\frac{2a}{b^2}\right)^2 (3a^{-2}b^3)^{-2}$. Write with positive exponents only.

a. $\frac{6a^6}{b^{10}}$
b. $\frac{2}{3b^2}$
c. $\frac{-24b}{a^4}$
d. $\frac{4a^6}{9b^{10}}$
e. None of the above.

Answer #16: _____

17. Expand: $(a-3b)^2$

a. a^2+9b^2
b. a^2-9b^2
c. $a^2-6ab+9b^2$
d. $a^2-3ab+6b^2$

Answer #17: _____

18. Simplify: $y^2+6y-6-(2y^3-4y)+(3y^2+y+1)$

a. $-2y^3-2y^2+y-7$
b. $-2y^3+4y^2+2y-5$
c. $-2y^3-2y^2+9y-7$
d. $-2y^3+4y^2+11y-5$

Answer #18: _____

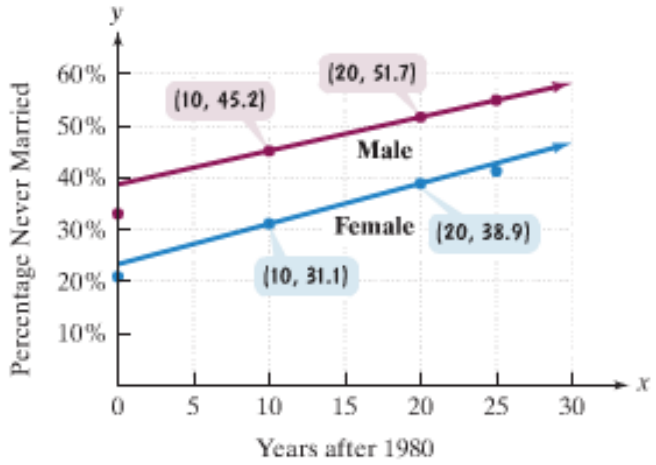
19. Divide: $(5y^2-4y+2y^3-5)\div(y+3)$. What is the remainder?

a. There is no remainder.
b. 82
c. -172
d. 100
e. -2

Answer #19: _____

20. Solve the system of equations: $\begin{array}{c} 3x-5y=-2 \\ 2x-3y=1 \end{array}$. (7 points)

21. The graph below gives the Percentage of United States Population Never Married, Ages 25-29. (Source: *US Census Bureau*)



a. Use the 2 given points to find the equation of the line to model the percentage of never married females age 25-29. Let x represents the number of years after 1980 and y represent the percentage of females never married. Show all your steps. (4 points)

b. Find the y-intercept of the equation: (2 points)

c. Interpret the y-intercept in the context of the problem. (2 points)