A

Math 201 - Test 1

Section:_____ **Name:** SAMPLE

In problems 1-7 below (valued at 5 points each) indicate your choice by circling the preceding letter. For all other problems, show appropriate work to receive credit (value indicated) and place your answer in the blank provided. ***Calculators are not allowed on this exam.*** *Formulas you may need on this exam: $D = RT$, $A = l \times w$, $P = 2l + 2w$, $A = \frac{1}{2} bh$, $A = \frac{1}{2} h(b_1 + b_2)$,*

1. Solve for y: $\frac{2}{3}y + \frac{1}{2}(y-3) = \frac{y+1}{4}$

   a.) $-15/11$

   b.) $6/5$

   c.) $21/11$

   d.) $60/13$

   e.) None of the above

2. Solve for r: $A = P + Prt$

   a.) $\frac{A-P}{Pt}$

   b.) $\frac{A-P}{P+t}$

   c.) $\frac{A+P}{Pt}$

   d.) $\frac{A}{P+Pt}$

   e.) $A - P - Pt$

3. Solve for x: $\sqrt{x+6} - x = 4$

   a.) 5 and 2 only

   b.) 2 only

   c.) -2 only

   d.) -5 and -2 only

   e.) None of the above

4. Solve for x: $x^4 - 6x^2 + 5 = 0$

   a.) ± 1 and ± 5

   b.) 2 and 3

   c.) -2 and -3

   d.) ± 1 *and* $\pm \sqrt{5}$

   e.) None of the above

5. The solution of $2(4x + 3) \geq 8 - 4(x - 1)$ is:

a.) $x \leq -1/2$

b.) $x \geq 3/2$

c.) $x \leq -2/3$

d.) $x \geq 1/2$

e.) None of the above

6. For what values of x is $\left|\frac{8-3x}{-4}\right| \geq 3$?

a) $\left(-\infty,-\frac{4}{3}\right]$ and $\left[\frac{4}{3},\infty\right)$

b) $\left[-\frac{4}{3},\frac{20}{3}\right]$

c) $\left[-\frac{4}{3},\infty\right)$

d) $\left(-\infty,-\frac{4}{3}\right]$ and $\left[\frac{20}{3},\infty\right)$

e) $\left[\frac{20}{3},\infty\right)$

7. If $f(x) = 2x - 3$, then $\frac{f(x+h) - f(x)}{h} =$

a.) $\frac{2x + h - 3}{h}$

b.) 2

c.) 1

d.) 0

e.) $2h$

8. If $f(x) = \frac{x}{2x^2 - 4x}$ and $g(x) = \begin{cases} x - 4, & x < 2 \\ x^2, & x > 2 \end{cases}$: (2 points each)

a.) What is the domain of $f(x)$? _____

b.) Evaluate $f(-1)$: _____

c.) What is the domain of $g(x)$? _____

d.) Evaluate $g(-1)$: _____

9. Give an example of a 3rd degree polynomial function: (2 points) _____

10. State the domain of the function $f(x) = \sqrt{x - 1}$: (2 points) _____

11. In the problems below, establish an appropriate *equation* or *inequality* and solve. You will not receive credit for a trial and error solution. (a: 7 points, b: 5 points)

a.) *A company produces figurines at a cost of $3.00 per unit. If fixed costs are $1,500 per month and each unit sells for $8, how many figurines must be sold in a given month to break even?*

_____

How many figurines must be sold in a given month in order to earn a profit of $6,500 in that month?

_____

b.) *A fence is to be placed around a rectangular plot so that the enclosed area is 800 ft² and the length of the plot is twice the width. What are the dimensions of the plot? How many feet of fencing must be used?*

_____

Dimensions: _____

Fencing needed: _____

_____

12. If $f(x) = x^2 - x$ and $g(x) = 2x$, find the following: (2 points each)

a.) $(f+g)(x)$: _____ b.) $(f-g)(x)$: _____ c.) $(f-g)(4)$: _____

d.) $(fg)(x)$: _____ e.) $(\frac{f}{g})(x)$: _____ f.) $(f \circ g)(x)$: _____

g.) $(g \circ f)(-4)$: _____

h.) Identify limits on the domain in part e above:

13. Find the inverse function of $f(x) = 3x + 5$. Show ***all*** steps. (4 points) $f^{-1}(x)$ = _____

14. Identify any x axis, y axis or origin symmetry in the relation $5x^2 - 2xy + y^2 = 0$. Show all appropriate steps. (5 points)

_____

15. Sketch the graph of $4x^2 + y^2 = 16$, using x and y intercepts and results of symmetry tests. (6 points)

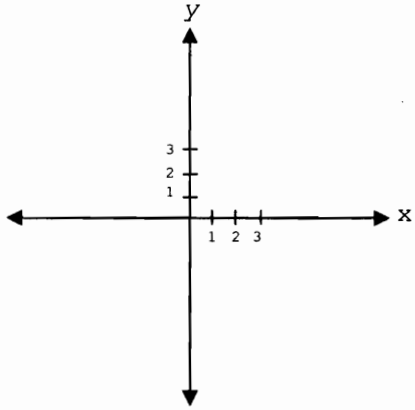
Identify:

x intercept(s): _____

y intercept(s): _____

Any x axis, y axis or origin symmetry:

_____



16. In the blank to the left of each function listed in Column A, place the number of the graph in Column B that represents that function. *Each item in Column B may be used once, more than once or not at all.* (2 points each)

Column A	**Column B**
_____ a.) $y = f(x) = \lvert x + 1 \rvert$	
_____ b.) $y = f(x) = 2x^2 + 1$	
_____ c.) $y = f(x) = -\sqrt{x - 1}$	
_____ d.) $y = f(x) = \frac{1}{x}$	
_____ e.) $y = f(x) = 3x - 1$	