

Math 010 Final Exam Fall 2007

Please show all work on the enclosed exam, even for the multiple choice questions. Final answers must be in reduced form.

Name: _____

READ INSTRUCTIONS CAREFULLY !

Please make sure to show work. Keep your work organized and legible.

Problems 1 – 4 are each worth 8 points.

1. Solve and express your answer in interval notation:

$$-2 \leq 2 - x < 0$$

- a. $(0,4]$
- b. $[-4,2)$
- c. $(-\infty, -2) \cup [4, \infty)$
- d. $(2,4]$
- e. none of the preceding

2. Simplify: $5 + 3[x - 2(1 + x)]$

- a. $8x - 16$
- b. $8x^2 - 8x - 16$
- c. $-8x - 16$
- d. $-1 - 3x$
- e. none of the preceding

3. Find the equation of the line through $(-1,5)$ and $(2,4)$.
Which of the following is the **y-intercept**?

- a. $\frac{14}{3}$
- b. $\frac{10}{3}$
- c. $\frac{2}{3}$
- d. $\frac{-1}{3}$
- e. none of the preceding

4. Multiply: $(a + \sqrt{3})^2$

a. $a^2 + 3$

b. $a^2 + 2a\sqrt{3} + 3$

c. $a^2 + a\sqrt{3} + 3$

d. $a^2 + 3a + 3$

e. none of the preceding

Problems 5 – 14 are short answer worth 5 points each.

5. The x-intercept of the line $2x - 3y = 5$ is: _____.

6. Factor completely: $5x^3 + 5x^2$

7. Simplify, assume $x > 0$: $\sqrt{18x^3}$

8. If $f(x) = 2x^2 - 3x$, determine $f(-3)$

9. Add: $\frac{1}{x} + \frac{1}{y}$

10. Factor: $2x^2 - 21x + 10$

11. Solve for x: $ax - bx = c$

12. Write in radical notation with positive exponents: $y^{-4/5}$ _____.

13. The following relation is a function: $\{(-2,4),(-6,8),(0,-8),(1,8)\}$. If the ordered pair _____ is added, this will no longer be a function.

14. What is the domain of $f(x) = \frac{3}{2x-9}$? _____

Problems 15 – 19 are 8 points each. Solve each of the following equations and keep your work organized.

15. Solve: $5 - 2(x - 3) = \frac{2}{3}x$

16. Solve: $x^2 = 5x$

17. Solve by looking carefully at the structure of the equation. Your answer must be in simplified form.

$$(2x - 5)^2 = 24$$

18. Solve the following system of equations:

$$\begin{cases} 2x + 5y = 9 \\ 4x - y = 2 \end{cases}$$

19. Determine the solutions to the equation: $x^2 + 2x - 5 = 0$

20. (10 pts) Solve: $\frac{5x}{x^2 - 6x + 8} - \frac{3}{x - 4} = \frac{5}{x - 2}$

For problems 21 and 22, determine the equation or the system of equations you could use to solve the problem. Do not solve the problem – just “set up” the situation. Each is worth 10 points.

21. Tracy sold 50 ink cartridges, one kind \$30.86 and the other at \$43.58. In all \$1733.80 was taken in. How many of each paintbrush was sold? **Do not solve the problem**

Define your variable(s):

Equation(s):

22. John rode in a motor boat for 60 miles at a constant cruising speed to get to his fishing grounds. Then for 5 miles he trolled to catch fish. His trolling speed was 15 miles per hour slower than his cruising speed. The entire trip took six hours. Approximate the cruising speed.

Do not solve the problem

Define your variable(s); a chart is sufficient:

Equation(s):

Solve the following word problems. Each is worth 12 points.

23. Sara takes 4 hours longer to complete a job than it takes Kate. When they work together, it takes them a total of 5 hours to complete the job. Approximate to the nearest tenth how long it takes Kate to complete the job working alone.

Define your variable(s):

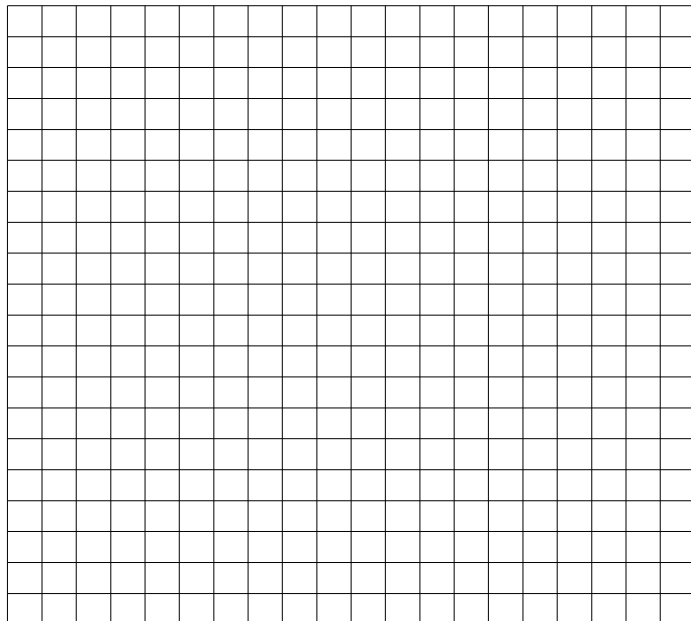
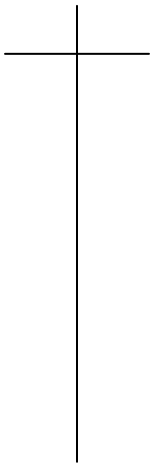
Equation(s) and solution:

24. The area of a rectangle is 20 square inches. The length is three less than four times the width. Approximate the width to the nearest tenth.

Define your variable(s) or show diagram:

Equation(s) and solution:

25. (12 pts) Determine a table of values for the equation $5x - 4y = 8$. A minimum of three ordered pairs should be included. Using this table, graph this equation on the graph paper provided.



26. (12 pts) Let $f(x) = 4x^2 + 8x - 5$. **Determine the vertex and x intercepts and graph it below.**

Vertex:

x-intercepts:

