

# MATHEMATICS 91

FINAL EXAM

Fall 2008 VERSION Beans

STUDENT NAME:

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INSTRUCTOR NAME:

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SECTION:

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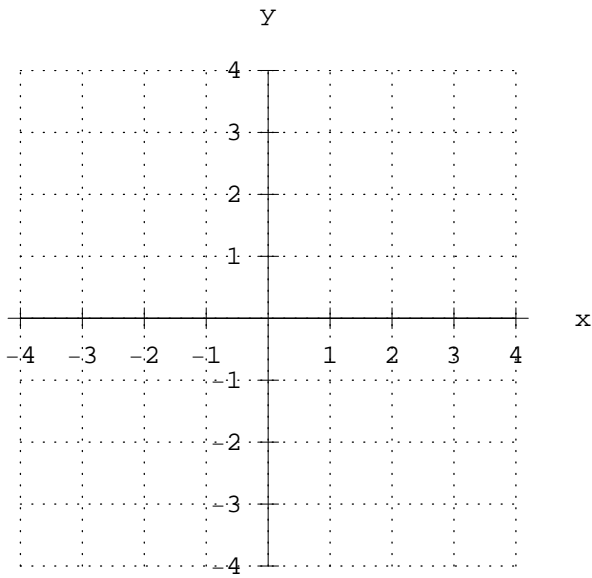
- This exam has 25 questions. Each question is worth 4 points.
- Show sufficient work to support your answers. If you do not show your work when indicated, you may lose points, **EVEN IF YOU HAVE THE CORRECT FINAL ANSWER.**
- This is a closed book exam. No notes, no books allowed.
- No calculators allowed.
- Write your name at the top of each page.
- Show your work in the space indicated. If you do not have enough room to work on a particular problem, you can use the back of the previous page or an extra sheet of paper. Make sure that the graders can find any work that you want graded. Write your name and student number on any extra paper.

Question	1	2	3	4	5	6	7	8	9	10	11	12	13
Score													

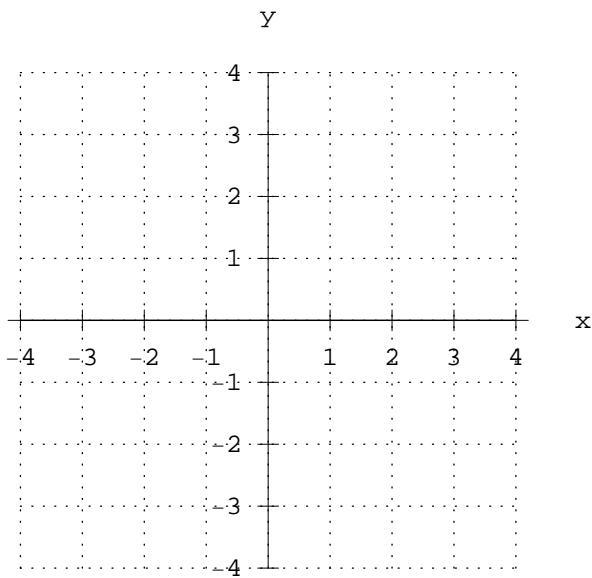
Question	14	15	16	17	18	19	20	21	22	23	24	25	TOTAL
Score													

NAME: \_\_\_\_\_

1. GRAPH the equation  $y = -x^2 + 2x + 1$  below, and LABEL the vertex of the graph.



2. Graph the equation  $y = 2 - 3x$  below.



3. Evaluate  $\sum_{i=1}^3 3^i$ .

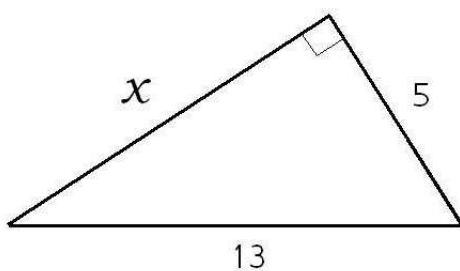
SHOW WORK HERE:

Answer: \_\_\_\_\_

NAME: \_\_\_\_\_

4. Find  $x$  in the right triangle below.

Answer: \_\_\_\_\_



5. Simplify  $3\sqrt{5} + \sqrt{20} - 9\sqrt{80}$ .  
SHOW WORK HERE:

Answer: \_\_\_\_\_

6. Solve  $b^2 - 7b + 10 = 0$  by factoring.  
SHOW WORK HERE:

Answer: \_\_\_\_\_

7. Simplify  $\frac{\frac{1}{x} + \frac{1}{y}}{\frac{1}{x} - \frac{1}{y}}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

NAME: \_\_\_\_\_

8. Solve  $\sqrt[3]{x-5} - 9 = -6$ .

SHOW WORK HERE:

Answer: \_\_\_\_\_

9. Solve  $2x^2 + 4x - 5 = 0$  with the quadratic formula.

SHOW WORK HERE:

Answer: \_\_\_\_\_

10. Solve  $x^2 + 8x = 20$  by completing the square.

SHOW WORK HERE:

Answer: \_\_\_\_\_

11. Find the complex solutions of  $z^2 - 10z + 26 = 0$ .

SHOW WORK HERE:

Answer: \_\_\_\_\_

12. Simplify  $\sqrt[3]{-64x^3}$ .

SHOW WORK HERE:

Answer: \_\_\_\_\_

NAME: \_\_\_\_\_

13. Simplify  $\frac{x-7}{49-x^2}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

14. Simplify  $\frac{3x^2+9x}{5} \cdot \frac{9}{5x+15}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

15. Simplify  $\frac{7y}{y-5} - \frac{35}{y-5}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

16. Simplify  $\frac{1}{x+2} - \frac{1}{x-2}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

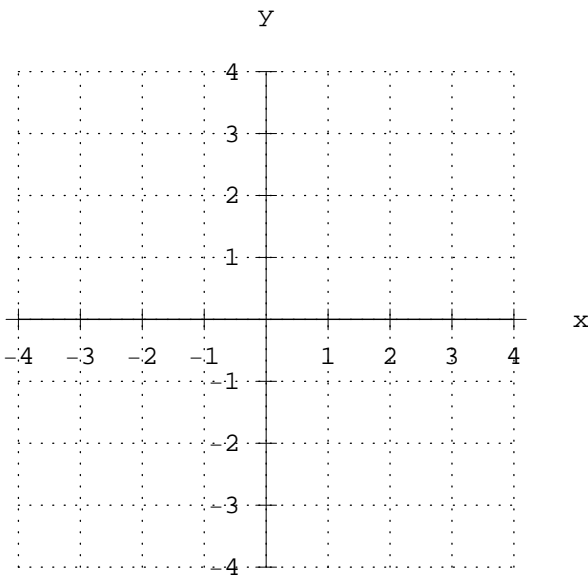
NAME: \_\_\_\_\_

17. Solve  $\frac{a}{8} = \frac{a-3}{5}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

18. Graph the circle with equation  $(x-1)^2 + (y+1)^2 = 4$ .



19. Find the distance between the points  $(3, 2)$  and  $(7, -1)$ .

SHOW WORK HERE: Answer: \_\_\_\_\_

20. Evaluate  $\frac{9!}{6!3!}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

NAME: \_\_\_\_\_

21. Rationalize the denominator, then simplify:  $\frac{14}{\sqrt{7}}$

SHOW WORK HERE:

Answer: \_\_\_\_\_

22. In a certain children's game, the child puts stickers of a hat, a shirt, and a pair of pants on a picture of a person to create a clothing outfit. There are four hats, five shirts, and two pairs of pants. How many possible outfits are there?

SHOW WORK HERE:

Answer: \_\_\_\_\_

23. Simplify  $(-27)^{2/3}$ .

SHOW WORK HERE:

Answer: \_\_\_\_\_

24. Simplify  $\frac{(5x^{1/2})^2}{x^{1/3}} \cdot \frac{1}{x^{1/12}}$ , where  $x > 0$ .

Answer: \_\_\_\_\_

SHOW WORK HERE:

25. The following three problems involve complex numbers. Your answers should be in the form  $a + bi$ .

(a) Simplify  $7(2 - 5i) + 3(8 + i)$

Answer: \_\_\_\_\_

(b) Simplify  $\frac{26 + 26i}{5 + i}$ .

Answer: \_\_\_\_\_

SHOW WORK HERE: