

Name: _____

Section: _____

MA 109

Fall 2013

Exam 1

September 25, 2013

Directions:

- Do not remove this page—you will turn in the entire exam. You have two hours to do this exam. No books or notes may be used. You may use a graphing calculator during the exam, but NO calculator with a Computer Algebra System (CAS) or a QWERTY keyboard is permitted. Absolutely no cell phone use during the exam is allowed.
- The exam consists of multiple choice and short answer questions. Record your answers on this page by filling in the appropriate selection, for example:

A B C D E.

- The exam is out of 100 total points: 5 points for each of 20 questions. **Only** this front page will be graded and **no partial credit** will be awarded. It is recommended that you check your work!

1. A B C D E

12. A B C D E

2. A B C D E

13. A B C D E

3. A B C D E

14. A B C D E

4. A B C D E

15.

5. A B C D E

16.

6. A B C D E

17.

7. A B C D E

18.

8. A B C D E

19.

9. A B C D E

10. A B C D E

20.

11. A B C D E

For grading use:

Total	
	(out of 100 pts)

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Multiple Choice: Show your work in the space below and shade the correct answer on the front page for each of the following.

1. A line goes through the points $(1, 2)$, $(3, 7)$ and $(-1, -3)$. What is the slope of the line?

Choices:

- (a) $\frac{1}{6}$
 - (b) -2.5
 - (c) $\frac{2}{5}$
 - (d) $\frac{5}{2}$
 - (e) -6
-

2. For which of the following equations is -2 a solution?

Choices:

- (a) $2x - 4 = 0$
 - (b) $3x^2 - 6 = 0$
 - (c) $2x^2 + 8x + 23 = 15$
 - (d) $\frac{4}{x} + 3 = \frac{1}{x + 2}$
 - (e) $3(4 - x) = 6$
-

3. Solve the following equation for x .

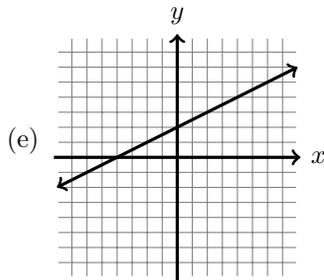
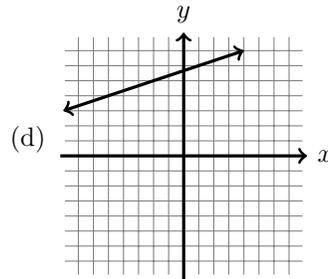
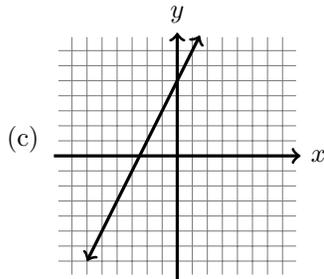
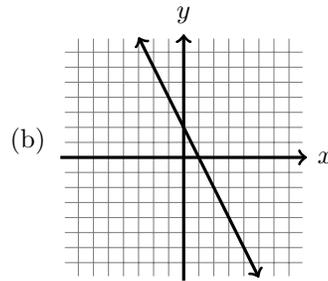
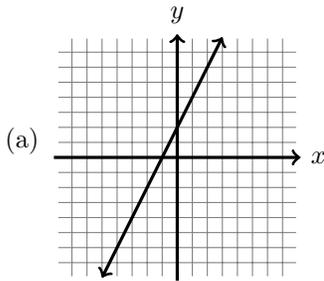
$$3x^2 + 2x = 12$$

Choices:

- (a) $-2 \pm \frac{\sqrt{140}}{6}$
 - (b) $\frac{-2 \pm \sqrt{148}}{6}$
 - (c) There are no real solutions.
 - (d) $2 \pm \frac{\sqrt{148}}{6}$
 - (e) $\frac{2 \pm \sqrt{140}}{6}$
-

4. Which of the following is the graph of the equation $y + 1 = 2(x + 3)$?

Choices:



5. Given the equation $x^2 + 6x + k = 0$, for what value of k is there exactly one real solution?

Choices:

- (a) -3
- (b) -4
- (c) 1
- (d) 9
- (e) 6



6. Solve for s .

$$(s - 2)^5 + 3 = 11$$

Choices:

- (a) $\sqrt[5]{10}$
 - (b) $2 + \sqrt[5]{8}$
 - (c) $2 \pm \sqrt{8}$
 - (d) $2 \pm \sqrt[5]{8}$
 - (e) $\pm\sqrt{10}$
-

7. Solve for p .

$$(3p + 7)(27 - p^3) = 0$$

Choices:

- (a) The real solutions are $-\frac{7}{3}$ and 3.
 - (b) The only real solution is 9.
 - (c) The real solutions are $\pm\sqrt{27}$.
 - (d) There are no real solutions.
 - (e) The real solutions are $-\frac{7}{3}$ and 9.
-

8. The point $(2, 1)$ is the midpoint of $(3, 4)$ and what other point?

Choices:

- (a) $(-1, 2.5)$
 - (b) $(0, 3)$
 - (c) $(1, -2)$
 - (d) $(2.5, 2.5)$
 - (e) $(4, 7)$
-

9. Solve the following equation for z .

$$\sqrt{13 - 4z} = z - 4$$

Choices:

- (a) The only real solutions are $\frac{-4 \pm \sqrt{132}}{2}$.
- (b) There are no real solutions.
- (c) The only real solution is $\frac{17}{5}$.
- (d) The only real solutions are 1 and 3.
- (e) The only real solution is -1.

10. In the following equation, solve for y .

$$\frac{3}{y-1} + \frac{4}{y^2 - 2y + 1} = 1$$

Choices:

- (a) The only real solution is $\frac{8}{3}$.
- (b) The real solutions are 0 and 5.
- (c) The only real solution is -1 .
- (d) The only real solution is -2 .
- (e) The real solutions are 1 and 2.

11. A circle has center $(2, 7)$ and intersects the x -axis at $x = 2$. Which of the choices below is an equation for the circle?

Choices:

- (a) $(x + 2)^2 + (y + 7)^2 = 4$
- (b) $(x - 2)^2 + (y - 7)^2 = 49$
- (c) $(x + 2)^2 + (y + 7)^2 = 7$
- (d) $(x - 2)^2 + (y - 7)^2 = 4$
- (e) $(x + 2)^2 + (y + 7)^2 = 49$

12. How many distinct real solutions does the equation $x^4 - x^3 - 2x^2 = 0$ have?

Choices:

- (a) Two real solutions
 - (b) One real solution
 - (c) Four real solutions
 - (d) Three real solutions
 - (e) No real solutions
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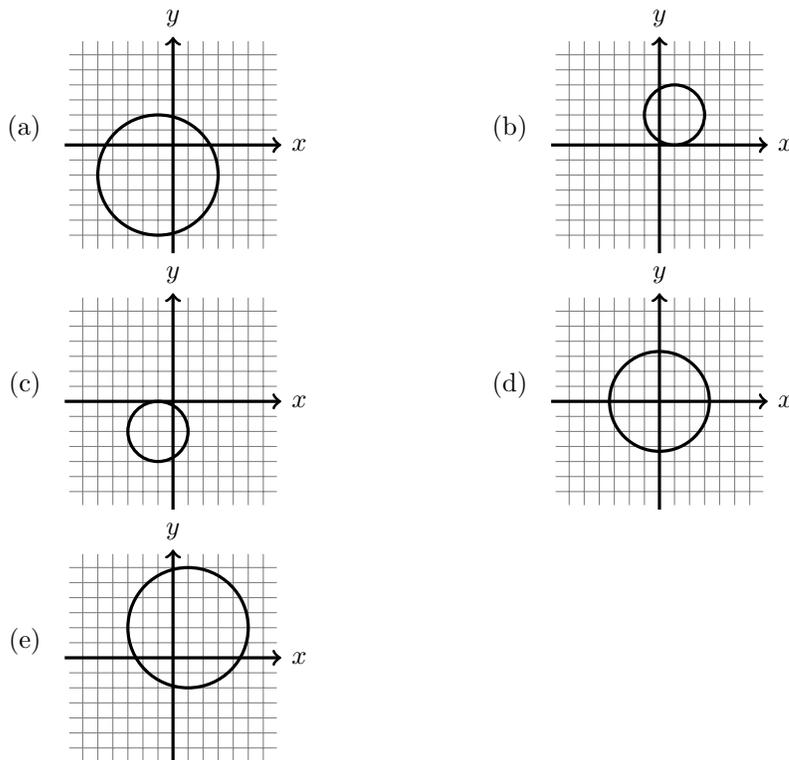
13. List the x -intercept(s) of the graph of $x + y^2 - 4 = 0$.

Choices:

- (a) Only $(0, -2)$
 - (b) Only $(0, 0)$
 - (c) Both $(0, 2)$ and $(0, -2)$
 - (d) Only $(4, 0)$
 - (e) Both $(4, 0)$ and $(-4, 0)$
-

14. Which of the following is the graph of the equation $x^2 - 2x + y^2 - 4y - 11 = 0$?

Choices:



Short Answer: Show your work below and place the appropriate answer on front page for each of the following.

15. Solve the equation for x . Include all solutions in your answer on the front of the exam.

$$|7 - x| = 13$$

-
16. Solve the equation for n .

$$F = P(1 + n)^3$$

-
17. Name one point on the graph of the equation $xy = 12$. (Do NOT list more than one point. Your answer should be exact, i.e. do not round.)

-
18. Give an equation for the line which goes through the point $(2, -1)$ and is perpendicular to the line $y = \frac{-7}{3}x - 1$.

-
19. Find all real solutions to the equation $x^4 - 5x^2 + 4 = 0$.

-
20. Solve for s .

$$\frac{8 - 2s}{5} = 17$$