MA 15300 Exam 1, Form 01 Fall 2015

Name: _____

Instructions:

1. Fill in your name above.

2. You must use a #2 pencil on the answer sheet.

3. On the answer sheet:
   a. Fill in your last name, first name and middle initial **and** blacken the appropriate spaces.
   b. Fill in your student identification number **and** blacken the appropriate spaces; **THIS IS THE 10-DIGIT NUMBER PRINTED ON YOUR STUDENT ID.**
   c. Fill in your section number **and** blacken the appropriate spaces; **THIS IS AVAIABLE IN THE TABLE BELOW**
   d. Fill in your test/quiz number from above (01)
   e. Sign your name

4. Make sure that the cover of this exam matches the color of your answer sheet. If you are color blind, ask the person sitting next to you for assistance.

5. There are 15 questions on the exam. On the answer sheet, blacken your choice of the correct answer in the spaces provided for questions 1 – 15. Do all of your work on the question sheet. Turn in the answer sheet when you leave and keep the question sheet. **Only the answer sheet will be graded.**

6. All questions are worth the same. **Please answer every question**. There is no penalty for guessing.

7. A TI-30Xa scientific calculator is the ONLY calculator that may be used on the exam. **No other calculators are allowed. Cell phones, iPods, books, and scrap paper are also NOT allowed.**

8. The exam is self-explanatory. Do **NOT** ask any questions about any of the exam problems.

9. When you are finished, you will need to take your answer sheet and your student ID to the proctor to submit your work and have your answer sheet and student ID inspected.

Class Time	Instructor	Section #		Class Time	Instructor	Section #
MWF 7:30	Lindsey Hill	**0041**		MWF 11:30	Theodore Stueve	**0101**
MWF 8:30	Jenna Beckley	**0024**		MWF 1:30	Dan Oprea	**0073**
MWF 8:30	Lindsey Hill	**0083**		MWF 2:30	Steve Grenat	**0033**
MWF 8:30	Mary Ritter	**0096**		MWF 2:30	Joshua Goodwin	**0098**
MWF 9:30	Vivek Mukundan	**0015**		MWF 3:30	Carolyn Henry	**0063**
MWF 9:30	Raika Sina	**0062**		MWF 3:30	Vianney Filos-Gonzalez	**0064**
MWF 9:30	Rachel Aker	**0093**		MWF 3:30	Steve Grenat	**0072**
MWF 10:30	Vivek Mukundan	**0021**		MWR 4:30	Steve Painter	**0023**
MWF 10:30	Nicholas Montan	**0092**		MWR 4:30	Carolyn Henry	**0095**
MWF 10:30	Jennifer Losby	**0099**		MWF 4:30	Patrick Devlin	**0065**
MWF 11:30	Herbert Cruz	**0100**		ONLINE	Patrick Devlin	**9999**

1. Simplify the following expression completely.

$$\left(\frac{1}{6}x^7y^{-7}\right)^{-2}$$

A. $\frac{36y^{14}}{x^{14}}$

B. $\frac{36y^{49}}{x^{49}}$

C. $\frac{y^{14}}{6x^{14}}$

D. $\frac{y^{49}}{6x^{49}}$

E. None of the above

2. Simplify the following expression completely.

$$\sqrt[3]{8x^3y^8z^4}$$

A. $\frac{8}{3}xy^2z$

B. $2x^2y^4z^2 \cdot \sqrt[3]{2x}$

C. $8xyz \cdot \sqrt[3]{yz}$

D. $2xy^2z \cdot \sqrt[3]{y^2z}$

E. None of the above

3. Simplify the following expression completely.

$$(x+y)^2 - (x^2+y^2)$$

A. 0

B. $2y^2$

C. $2xy$

D. $2y^2 + 2xy$

E. None of the above

4. Factor each of the following polynomials, and determine which has a factor of $x + 2$.

A. $x^2 + 4$

B. $x^4 - 16$

C. $x^2 + 10x - 24$

D. There is more than one possible answer

E. None of the above

5. Simplify the following expression completely. You may need to use one of the following formulas:

$$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$
$$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$$

$$\frac{x^2 - 4}{x^3 - 8} \div \frac{x^2 + 4x + 4}{x^3 + 8}$$

A. 1

B. -1

C. $\frac{x^2-2x+4}{x^2+2x+4}$

D. $\frac{(x+2)^2}{(x^2-2x+4)(x^2+2x+4)}$

E. $\frac{1}{x^2-2x+4}$

6. Perform the indicated operations and simplify:

$$\frac{x}{x-1} - \frac{1}{x+1}$$

A. 0

B. 1

C. $\frac{x+1}{x-1}$

D. $\frac{x-1}{x+1}$

E. $\frac{x^2+1}{(x-1)(x+1)}$

7. Rationalize the denominator of the following expression, and simplify completely.

$$\frac{3+\sqrt{x}}{3-\sqrt{x}}$$

A. $6x$

B. $6\sqrt{x}$

C. $\frac{x^2+6x+9}{9-x}$

D. $\frac{x+6\sqrt{x}+9}{9-x}$

E. None of the above

8. Simplify the following expression completely.

$$\frac{\frac{x}{y^2}-\frac{y}{x^2}}{\frac{1}{x^2}-\frac{1}{y^2}}$$

A. $-\frac{x^2+xy+y^2}{x+y}$

B. $\frac{x^2+xy+y^2}{x+y}$

C. $-x+xy+y$

D. $-x-xy-y$

E. $x+xy+y$

9. Solve the following equation.

$$-7x-2(-4x-5)-1=7x-3$$

A. There is one solution for x. It is less than -3.

B. There is one solution for x. It is between -3 and -1.

C. There is one solution for x. It is between -1 and 1.

D. There is one solution for x. It is between 1 and 3.

E. There is one solution for x. It is greater than 3.

10. Solve the following equation.

$$\frac{7}{x+2}+\frac{6}{x^2-4}=\frac{3}{2x-4}$$

A. There is one solution for x. It is less than 0.

B. There is one solution for x. It is greater than 0.

C. There are an infinite number of solutions for x.

D. There is no solution for x.

E. None of the above

11. Solve $V = C\left(1-\frac{T}{N}\right)$ for N.

A. $N=\frac{V+CT}{C}$

B. $N=\frac{C-CT}{V}$

C. $N=\frac{CT}{C-V}$

D. $N=\frac{T}{1-V}$

E. $N=\frac{T}{-V}$

12. A woman has \$216,000 to invest and wants to generate \$12,000 per year in interest income. She can invest in two tax-free funds. The first is stable, but pays only an average 4.5% interest per year. The second pays an average of 9.25% interest per year, but has greater risk. If x represents the amount of money invested in the fund that averages 9.25% interest per year, which of the following best describes the value of x?

A. x is less than \$50,000

B. x is between \$50,000 and \$60,000

C. x is between \$60,000 and \$70,000

D. x is between \$70,000 and \$80,000

E. x is more than \$80,000

13. A man can clear his driveway and sidewalks using a snow blower in 50 minutes. It takes his son 3 hours to do the same job using a shovel. About how long would it take them to clear the driveway if they worked together?

A. Less than 25 minutes

B. Between 25 and 35 minutes

C. Between 35 and 45 minutes

D. Between 45 and 55 minutes

E. More than 55 minutes

14. Solve the following equation.

$$x^2 = \frac{17x - 12}{5}$$

A. There are two real solutions for x. Both are positive.

B. There are two real solutions for x. Both are negative.

C. There are two real solutions for x. One is positive and one is negative.

D. There are no real solutions for x.

E. None of the above.

15. Solve the following equation.

$$10(3x - 4)^2 + 160 = 0$$

A. There are two real solutions for x. Both are positive.

B. There are two real solutions for x. One is positive and one is negative.

C. There are two real solutions for x. One is positive and one is zero.

D. There are two real solutions for x. One is negative and one is zero.

E. There are no real solutions for x.