

MA 202 Final Exam

Name:

No calculators may be used on this test. Show all your work and write in complete sentences. You will not receive full credit for answers without any explanation.

1. (8 points) Use Pythagorean Theorem to prove the Distance Formula. (Be sure to state both the Pythagorean Theorem and the Distance Formula.)

2. (a) (14 points) Find the mean of two sets, A and B, where A has 20 elements and mean 80 and B has 30 elements and mean 75.

(b) Suppose the data in set A consists of test scores from a test given last week to a class of 20 students. What graphical representation would you use to display this data? Explain why.

(c) Suppose the data in set B consists of the yearly average test scores for an certain teacher's class collected over the last 30 years. What graphical representation would you use to display this data? Explain why.

3. (10 points) Explain how you would prove the area formula for a circle with radius r .

4. (14 points) .

(a) Name the above surfaces in space. Be specific!

- 1.
- 2.
- 3.
- 4.
- 5.

(b) Which, if any, of the five are polyhedra? Why?

(c) Which, if any, of the five are regular polyhedra? Why?

5. (a) (12 points) Find the rule in the following Guess My Rule game.

x	4	2	0	5	1
y	14	8	2	17	5

(b) Is this correspondence a function? Why or why not?

(c) Using the variables x and y , give the algebraic expression or equation that describes this correspondence.

6. (16 points) At a carnival, you are offered the opportunity to play a game that consists of rolling a red die, a green die, and a blue die on a single toss.

(a) What is the probability of rolling three even numbers?

(b) What is the probability of rolling exactly two even numbers?

(c) What is the probability of rolling one or no even numbers?

(d) If all three dice show even numbers, you win \$16. If exactly two of the three dice show even numbers, you win \$12. Otherwise, you win nothing. If it costs \$8 to play the game, what is the expected value? Would you play?

7. (14 points) Mary solved the following metric problems.

1. $12 \text{ dm} = \underline{1,200} \text{ mm}$

2. $350 \text{ mm} = \underline{3,500} \text{ cm}$

3. $5 \text{ cm} = \underline{50} \text{ dm}$

4. $2 \text{ m} = \underline{200} \text{ cm}$

(a) Which problems did she answer correctly?

(b) What does she correctly understand about the conversions?

(c) What is her mistake?

(d) How would you help her correct her mistake? (Don't just say, "by using examples".)

8. (a) (12 points) How would you explain rotation symmetry to a student in your elementary class?

(b) Which of the following have point symmetry? Explain why.

E, F, I, M, X, Z

(c) Do any of the letters without point symmetry have reflection symmetry? If so, list them and draw the line of reflection.