

Math 138 – Exam 2A

Directions: Read each problem carefully. Remember to show all work in a logical and legible manner. To receive credit, **all answers must follow logically from the work that you show on your exam.** You may not share calculators or use the calculator function of a cell phone.

1. Solve the following system of equations. Write your answers in the blanks.

$$\begin{cases} 4x + y - 3z = 11 \\ 2x - 3y + 2z = 9 \\ x + y + z = -3 \end{cases}$$

x=_____ y=_____ z=_____

2. Consider the function $f(x) = \sqrt{x+1}$.

a. Find $f(0)$.

b. Find $f(t-2)$

c. Find the domain of $f(x)$.

3. Is the following function even, odd, or neither?

$$f(t) = -t^4 - 3t$$

4. Consider the following graph:

a. On what intervals (if any) is the graph

increasing? _____

decreasing? _____

constant? _____

b. Determine the relative minimum or maximum (if any)

relative minimum? _____

relative maximum? _____

c. Is y a function of x ? Explain your reasoning.

d. What is the domain of this function?

e. What is the range of this function?

f. Give the general equation of the function family to which this graph belongs.

7. The Royal Gorge Bridge near Canon City, Colorado is the highest suspension bridge in the world. The bridge is 1053 feet above the Arkansas river. A rock is dropped from the bridge. How long does it take the rock to hit the water?

8. A one-story building is 14 feet longer than it is wide. The building has 1632 square feet of floor space. What are the dimensions of the building?

Length=_____

Width=_____

9. Find the equation of the parabola whose vertex is at the point (2, -1) and passes through the point (4, -3). You may leave your answer in standard form.