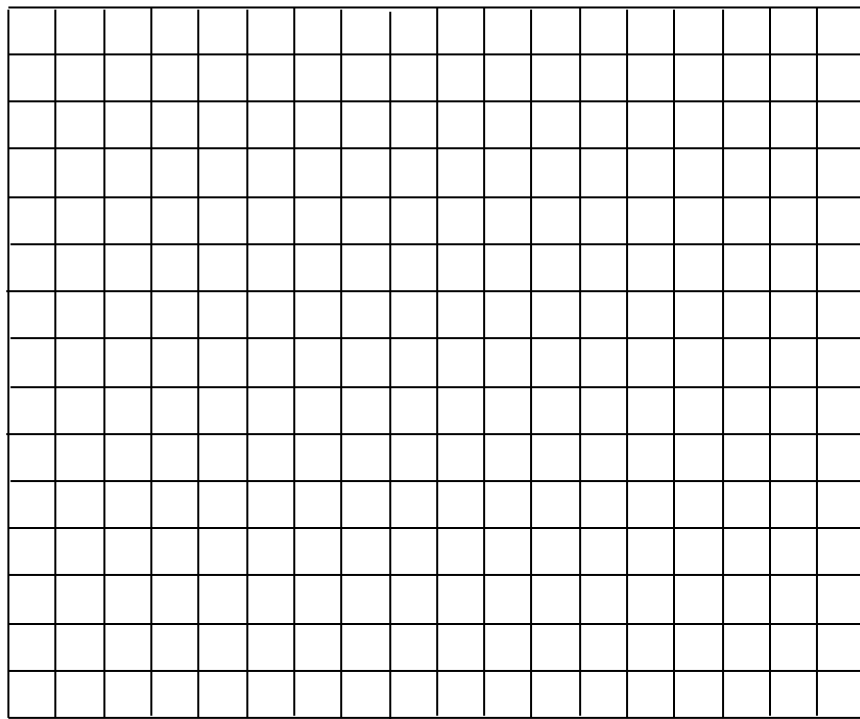


Instructions: All work must be shown in order to receive all points for all questions so practice showing all work. Practice **boxing your final answer**. Any answer that is a fraction must be in lowest terms and as mixed number for full credit. Since you can use a 5x8 notecard on the test use your notecard to practice or make one based on the problems you got wrong. Happy studying!

1. Use the function to answer the questions that follow: $f(x) = \frac{1}{2}(x - 1)^2 - 9$
- a) Give the vertex of the parabola as an ordered pair: _____
- b) Give the x-intercepts' approximate values as ordered pairs: _____
 Give as a simplified radical and then round to the nearest tenth.

- c) Give the y-intercept of the parabola as an ordered pair: _____

- d) Graph the parabola with **5 ordered pairs** (label the ordered pairs).



2. The number of households (in millions) that own RV's, dependent upon the number of years since 1980, are modeled using the following function.

$$f(t) = 0.0085t^2 - 0.16t + 6.48$$

For this model, in what year will the fewest households own recreational vehicles? Show all work in getting your answer.

3. Solve the following quadratic using the **square root property**. $2(x - 4)^2 + 5 = 27$
Give an exact answer in its simplest form.

4. Solve the following quadratic using the **quadratic formula**. $5x^2 - 4x = 3$
Give an exact answer in its simplest form.

5. Solve the following quadratic using the **zero product property**. $3x^2 = 5x - 2$
Hint: Factoring

6. Solve the following quadratic by **completing the square**. $3x^2 - 6x - 33 = 0$
Give an exact answer in its simplest form.

7. Find all values for: $f(x) = x^2 + 8x + 11$ where $f(x) = 20$

8. Find a function to model the parabola that contains the following 3 points.
(1, 4), (-1, -2) and (2, 13)

9. Give the discriminant of the following & tell me what the discriminant value means:
 $f(x) = 6x^2 - 48x + 96$

10. Given the following three ordered pairs, find the equation (linear or quadratic) that will model the data most accurately. Show all work. For a linear equation end in slope-intercept form. For a quadratic end in vertex form.
- a) $(-3, -2)$, $(-5, 6)$ & $(-1, 6)$

- b) $(1, 3)$, $(3, 7)$ & $(-1, -1)$

11. The following quadratic models the path of a projectile after it is launched. The dependent variable represents the projectile's height in meters at time t in seconds.

$$h(t) = -4.9t^2 + 196t - 29.4$$

- a) How long will it take the projectile to reach its maximum height? Round to 1 decimal if necessary.
- b) What is the maximum height that the projectile will reach? Round to 1 decimal if necessary.
- c) How long will it take for the projectile hit the ground (after it reached its maximum)? Round to 1 decimal if necessary.

12. Use a by-hand method to model the data and then use your calculator to model using regression. $\{(-2, 4), (-1.5, 0.5), (1, -4), (3, 1), (3.5, 4)\}$

13. Solve the system using elimination and answer as an ordered triple:

$$2x - 4y + 7z = 24$$

$$4x + 2y - 3z = 4$$

$$3x + 3y - z = 4$$

14. Solve the system using elimination and answer as an ordered pair.

$$2x + y = 6$$

$$3x + 4y = 4$$