

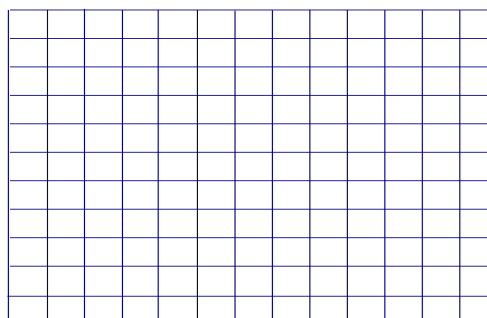
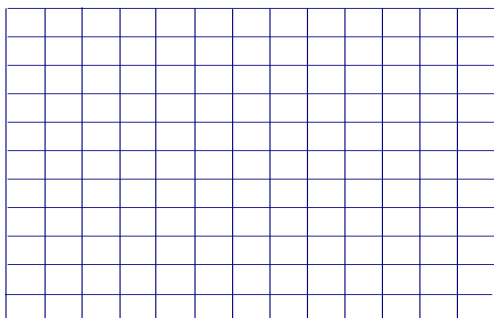
DIRECTIONS To receive full credit, you must provide complete solutions to the following problems on an attached lined paper with clearly numbered problem solutions. Transfer all your answers to the space provided on the test paper.

1. Write an expression for the function as stated.
 - a. A function with a constant rate of change equals 3 and has a value $f(0) = 5$.
 - b. A quadratic function with lead coefficient equal 2 and has the values $f(3) = 1$ and $f(0) = 2$.
 - c. A reciprocal function that has the values $f(1) = 2$, and $f(-1)$ undefined.
 - d. The square root function with value $f(12) = 9$ and has a domain $[3, \infty)$.

2. Sketch the graphs of the given functions.

a. $f(x) = \llbracket x - 1 \rrbracket + 2$

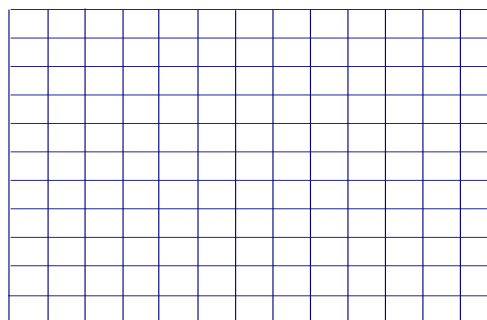
b. $f(x) = \begin{cases} 1 - (1 - x)^2, & x \leq 2 \\ \sqrt{x - 2}, & x > 2 \end{cases}$



3. The table shows the monthly revenue y (in thousands of dollars) of a landscaping business for each month of the year 2008, with $x = 1$ representing January. Find
- A linear model that best fit the data.
 - A Quadratic model that best the data.
 - Split the data into two sets and find a piecewise-defined model that best fits the data.

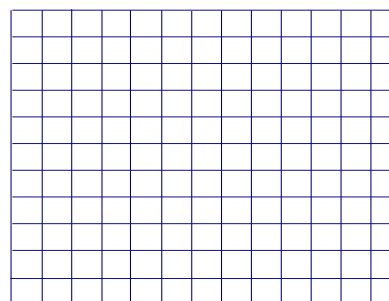
x (Months)	1	2	3	4	5	6	7	8	9	10	11	12
y (Revenue)	4.7	4.8	5.9	8.1	11.3	13.7	11.7	9.8	7.8	5.8	3.8	1.8

4. During a nine hour snow storm, it snows at a rate of one inch per hour for the first two hours, at a rate of 2 inches per hour for the next 6 hours, and at a rate of 0.5 inches for the remaining hour. Write and graph a piecewise-defined function that gives the depth of the snow storm. How many inches of snow accumulated from the snow storm?



5. A mechanic is paid \$20 per hour for regular time, the first 40 hours, and time and-a-half for over time, with maximum of 60 hours work week. Let h be the number of hours worked and W be the weekly wage for the mechanic.

- a. Write a piecewise-defined function for the hourly wage h and a piecewise-defined function for the weekly wage of the mechanic and graph the hourly wage function.



- b. Find the area bounded by h and the x axis over the intervals $[0,30]$ and $[0,50]$ and compute the weekly income for 30 and 50 hour work week and interpret the area as a weekly income for the mechanic