MATH 90 HW 8.2A *(offline worksheet)*

Graphing Nonlinear Functions, Part 1

Name: _____ **Score:** _____ / 120

Time your class starts: _____ **Teacher:** _____

INSTRUCTIONS: *For each function:*

1. Choose **at least 8 values** of x and calculate the corresponding values of y, recording them in the table and showing work steps for each. (3 points)
   - Choose your x and y values so that you don't have more than one point in your table that can't be graphed on the 10x10 graph grid.
   - Choose your x values so that you have no more than one undefined y-value (e.g. $\sqrt{-1}$). Enter that value as "N".
2. Then **graph the function** by plotting each ordered pair (x,y) on the grid; and **connect the points** to show the shape of the overall graph. (3 points)
   - *PLEASE PLOT GRAPHS IN PENCIL, NOT PEN, and draw graphs neatly. Use arrows to indicate a continuing line or curve.*
   - *Plot enough points to make sure you have enough to show the full shape of the graph, including any starting, ending or turning points.*
3. Use this graph to find the **x-intercept(s)** of the graph (if any exist), writing them as **ordered pairs**. (1 point)
4. Use this graph to find the **y-intercept(s)** of the graph (if any exist), writing them as **ordered pairs**. (1 point)
   - ***NOTE:*** *If you find that a graph does not have one type of intercept, write* ***NONE*** *rather than leaving the line blank.*
5. Using the graph, identify the **domain** of each function and write it in **interval notation.** (1 point)
6. Using the graph, identify the **range** of each function and write it in **interval notation**. (1 point)

number	square root
1	1
2	1.4
3	1.7
4	2
5	2.2
6	2.4
7	2.6
8	2.8
9	3
10	3.2
11	3.3
12	3.5
13	3.6
14	3.7
15	3.9
16	4
17	4.1
18	4.2
19	4.4
20	4.5

Each function is worth a maximum of 10 points.

- Take time to write and plot neatly – **if we can't read it easily, it will get 0 points**.
- Show the steps in the calculation FOR EACH POINT IN THE TABLE. (see example below)

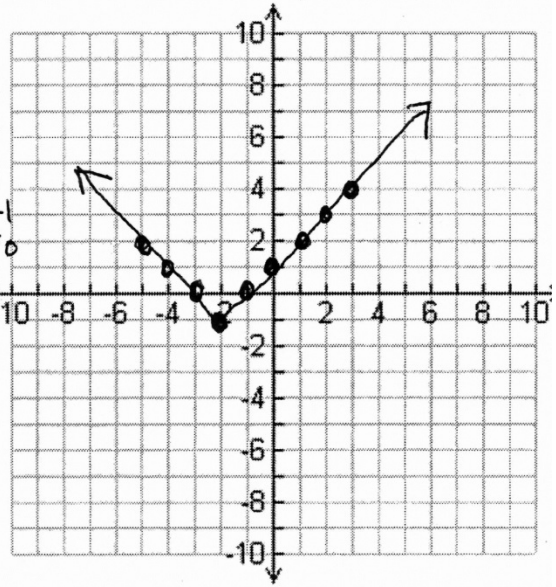
(If you write out the steps for each calculation, you won't need to use a calculator and you'll make fewer mistakes on negative signs.)

- For square root calculations, use the table at left.
- You will have an in-class quiz on problems like this where you have to graph the function by hand and show the same work as on this assignment.
- There will also be problems like these on the next test (Test 2) and on the final exam.

Expect to spend ≥ 90 minutes on this assignment outside of class.

x	y	Show calculations here:
0	1	$\|0+2\|-1 = \|2\|-1 = 2-1 = 1$
1	2	$\|1+2\|-1 = \|3\|-1 = 3-1 = 2$
2	3	$\|2+2\|-1 = \|4\|-1 = 4-1 = 3$
3	4	$\|3+2\|-1 = \|5\|-1 = 5-1 = 4$
−1	0	$\|-1+2\|-1 = \|1\|-1 = 1-1 = 0$
−2	−1	$\|-2+2\|-1 = \|0\|-1 = 0-1 = -1$
−3	0	$\|-3+2\|-1 = \|-1\|-1 = 1-1 = 0$
−4	1	$\|-4+2\|-1 = \|-2\|-1 = 2-1 = 1$
−5	2	$\|-5+2\|-1 = \|-3\|-1 = 3-1 = 2$

f(x) = |x+2| - 1



x -intercept(s): (−1,0) (−3,0)

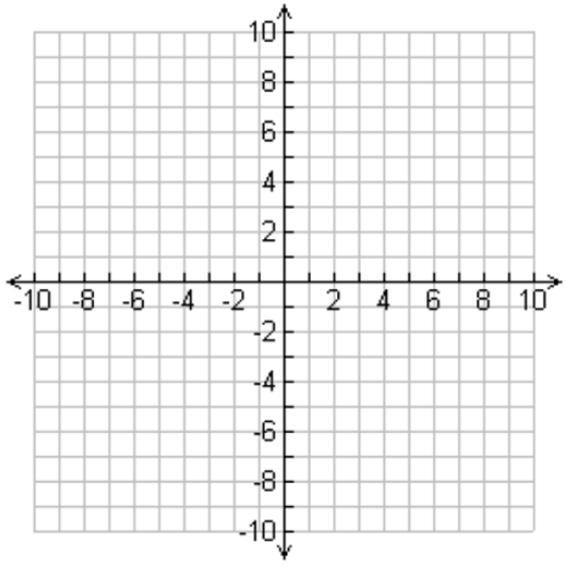
y -intercept(s): (0,1)

Domain: $(-\infty, \infty)$

Range: $[-1, \infty)$

1. f(x) = |x| **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

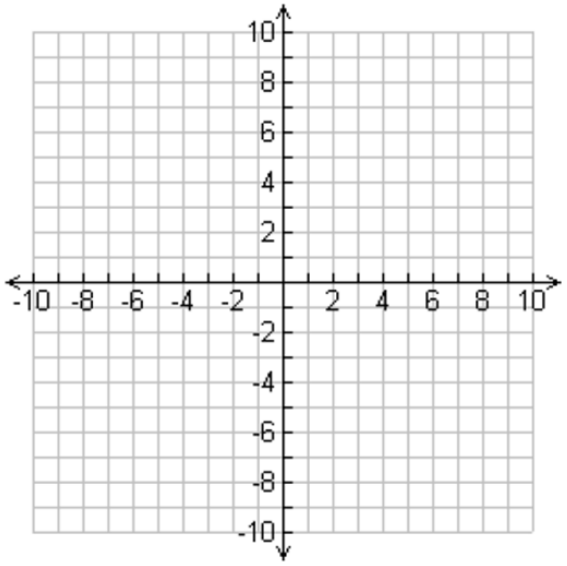
y -intercept(s):_____

Domain: _____

Range: _____

2. f(x) = − |x| **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

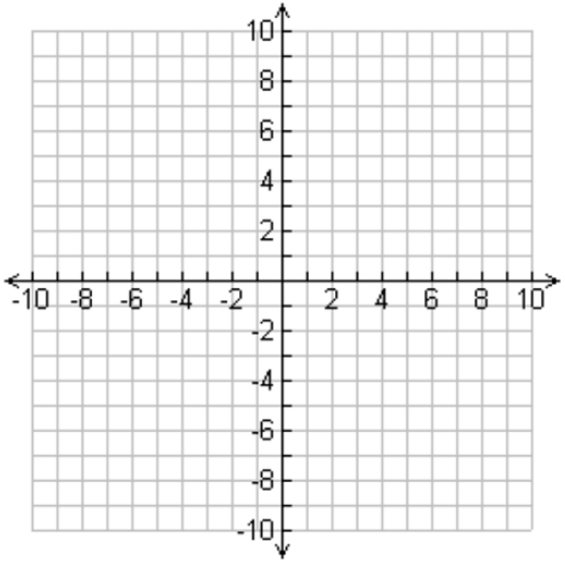
y -intercept(s):_____

Domain: _____

Range: _____

3. f(x) = |x + 2| **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

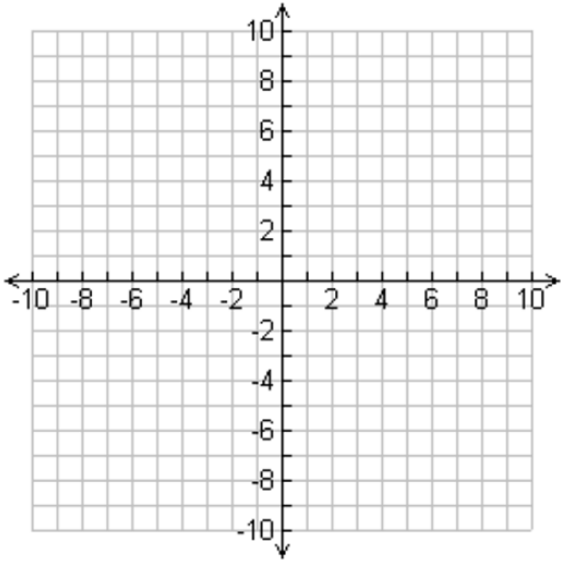
y -intercept(s):_____

Domain: _____

Range: _____

4. f(x) = |x| + 2 **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

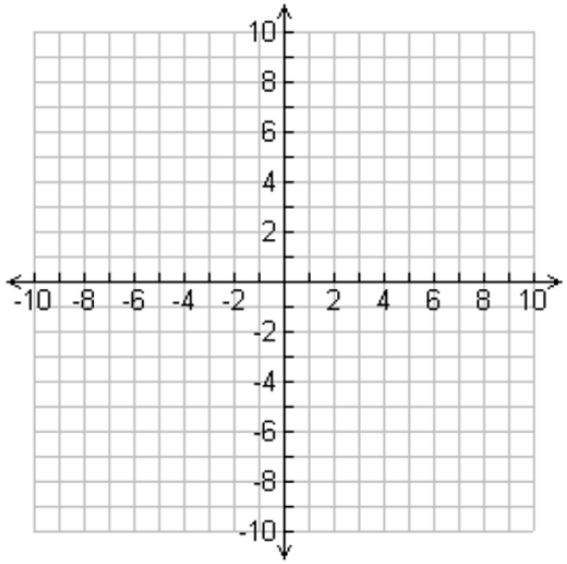
y -intercept(s):_____

Domain: _____

Range: _____

5. f(x) = | x – 4 | **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

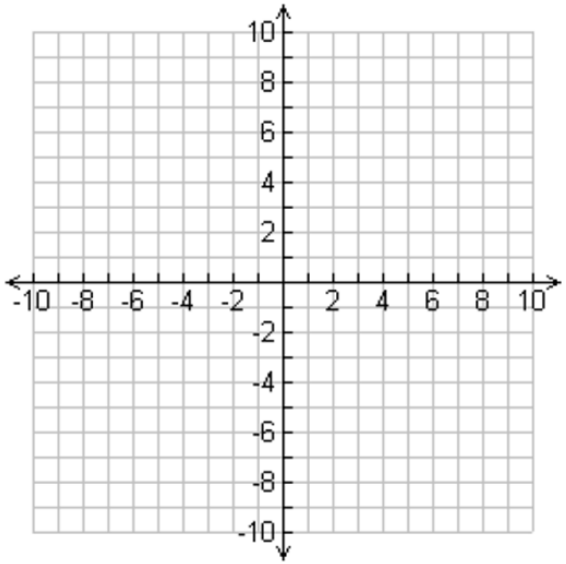
y -intercept(s):_____

Domain: _____

Range: _____

6. f(x) = 2 |x| - 5 **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

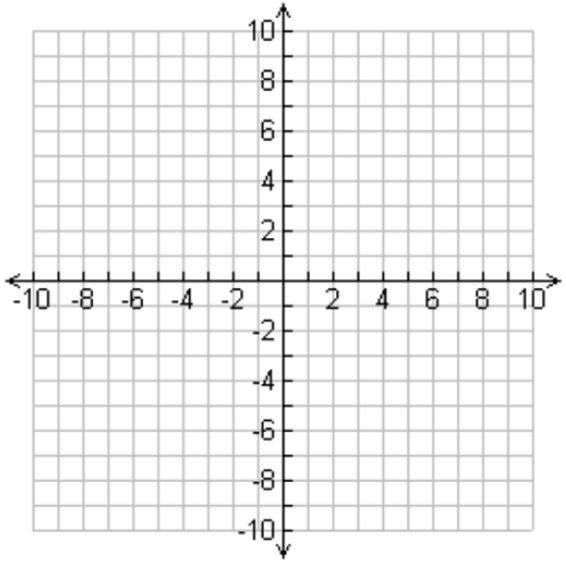
y -intercept(s):_____

Domain: _____

Range: _____

7. f(x) = 3 - |x| **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

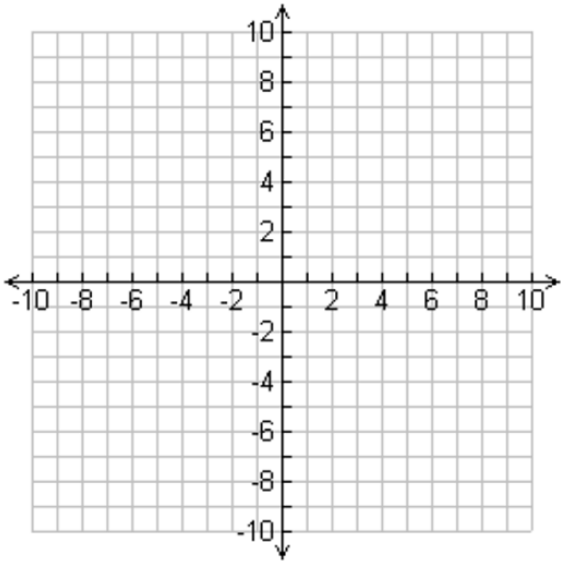
y -intercept(s):_____

Domain: _____

Range: _____

8. f(x) = |x| + x **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

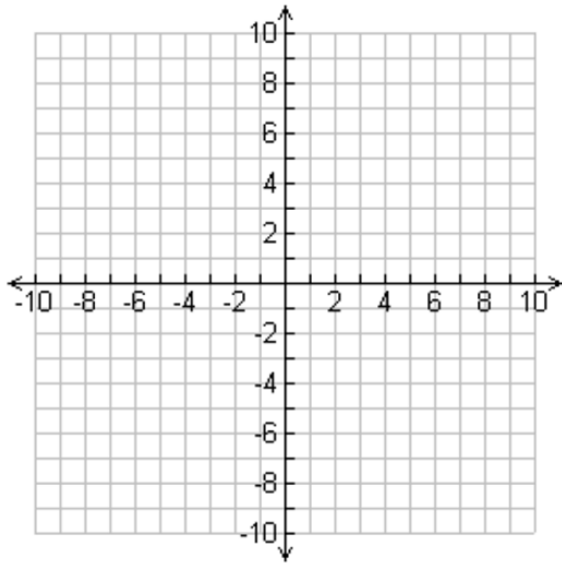
y -intercept(s):_____

Domain: _____

Range: _____

9. f(x) = $\sqrt{x}$ (Use table of square roots on page 1) **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

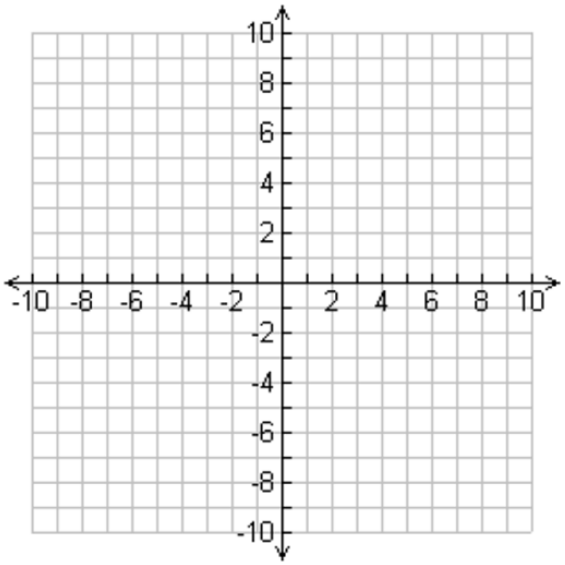
y -intercept(s):_____

Domain: _____

Range: _____

10. f(x) = $\sqrt{-x}$ (Use table of square roots on page 1) **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

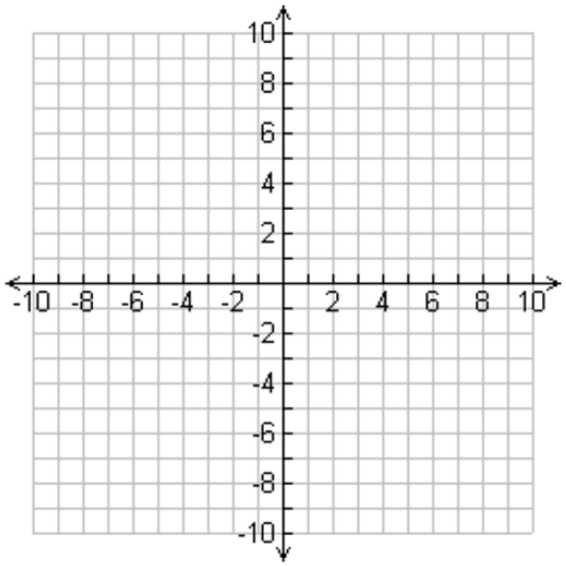
y -intercept(s):_____

Domain: _____

Range: _____

11. f(x) = $-\sqrt{x}$ (Use table of square roots on page 1) **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

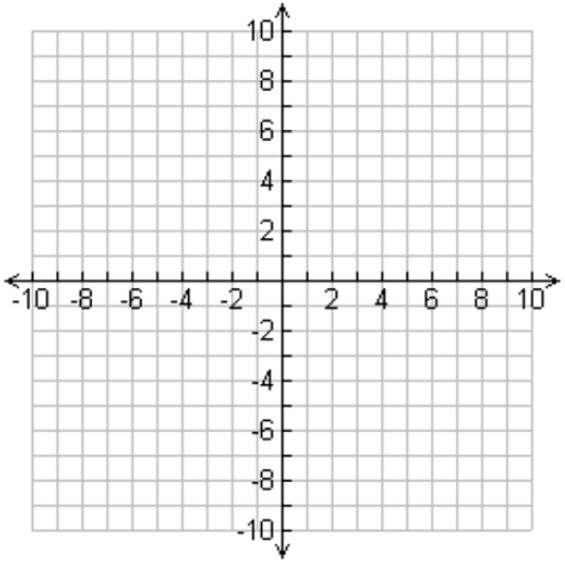
y -intercept(s):_____

Domain: _____

Range: _____

12. f(x) = $\sqrt{x+9}$ (Use table of square roots on page 1) **Score: ___ /10**

x	y	Show calculations here:



x -intercept(s):_____

y -intercept(s):_____

Domain: _____

Range: _____