

Pre-AP Algebra 2

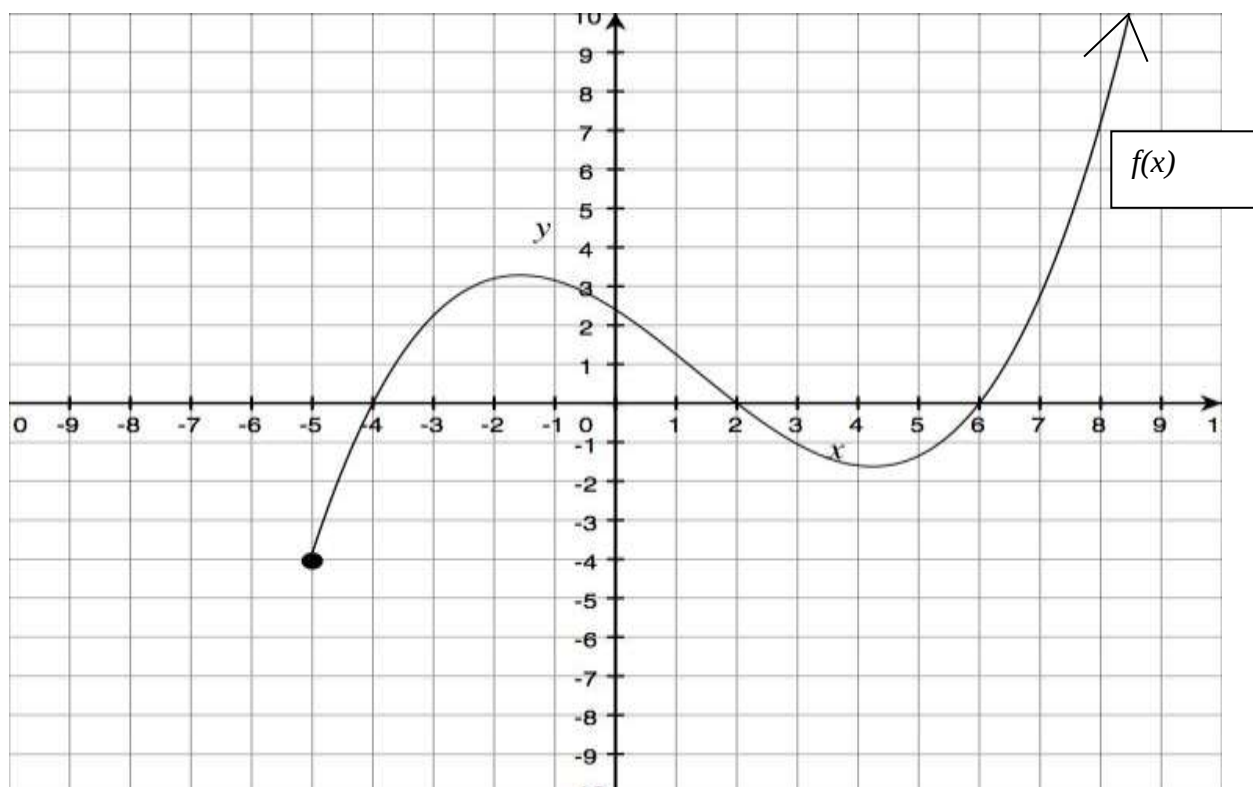
1-4 –Domain & Range / Graphical Analysis / Continuous vs Discrete

Objectives: The students will be able to distinguish discrete and continuous functions given verbal, tabular, and graphical representations. The students will be able to identify the domain and range of a function given a graph or situation. Additionally, students will be able to graph a given linear function over a restricted domain.

Materials: Hw #1-3 answers; tally sheets; Reading a Graph handout and answers; special note-taking templates; graph #1-4 overheads; Practice with Domain and Range handout and transparencies; hw #1-4

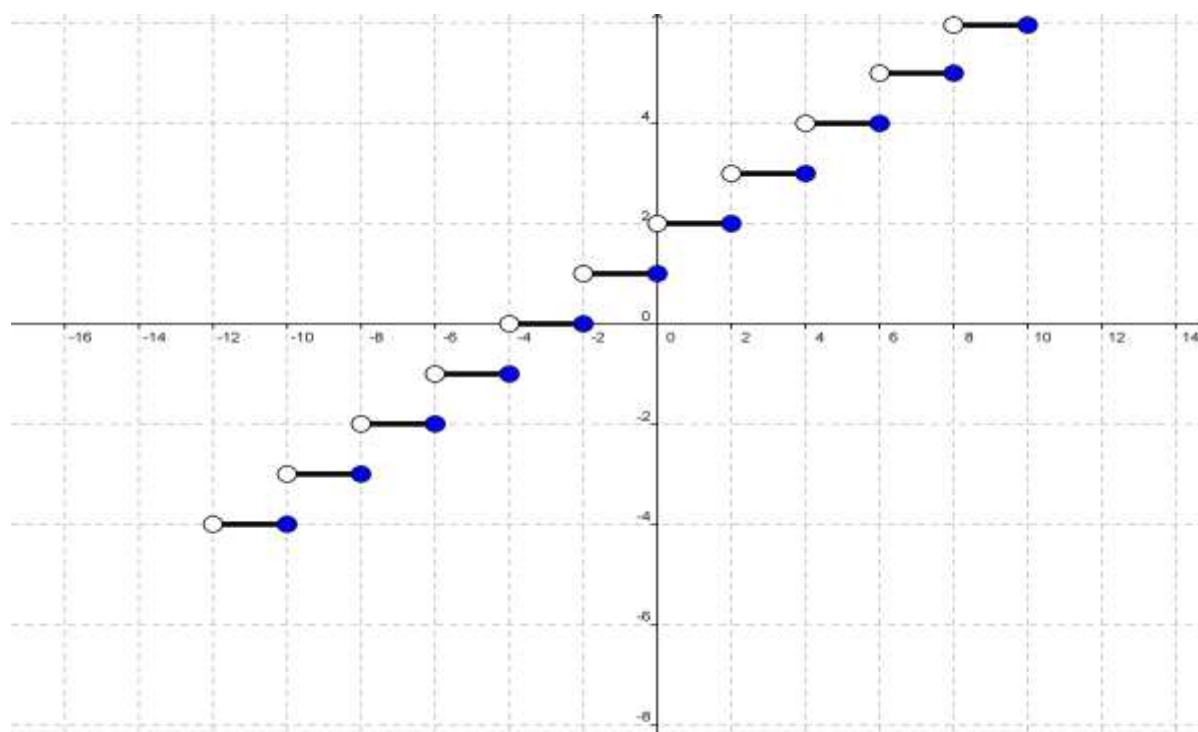
Time	Activity
10 min	Homework Review Students check their answers to hw #1-3 and discuss work with their group. Pass around a tally sheet for questions (one from each side of the room to speed it up).
5 min	Homework Presentations Review the top 2 or 3 questions from the tally sheet.
30 min	Quiz #1
15 min	DO NOW Pass out sorting cards to students. Give them 5 minutes to sort them at first, knowing they will put all of the tables, graphs, verbal together. Then tell them that there is a way to separate them into only 2 stacks. See if anyone notices the difference between discrete and continuous situations. What makes them different? What do they have in common?
15 min	Direct Instruction Hand out special note-taking template with graphs. Background Domain: all the possible input (x) values that a function can use. - On a graph, represented by the x-axis Range: all the possible output (y) values that a function can produce. - On a graph, represented by the y-axis Examples Show graph #1 on the overhead. What is the domain of the graph (i.e. what are all the possible x-values?). It's not just the integers – it's all the rationals and irrationals in between! How can we list them all? Use interval notation. Repeat with the range. Concepts - When there are a few distinct points, write out all the numbers in the domain and range. - When the function is connected, use interval (or inequality) notation. - If the domain (or range) includes all real numbers, you can write $D = \{(-\infty, +\infty)\}$ or $D = \{\mathbb{R}\}$ Examples Show graph #2 – 4 on the overhead and determine the domain and range of each.
15 min	Pair Work Hand out the Practice with Domain and Range worksheet. It is split up into 3 sections. Show answers on the overhead in the last 5 minutes and discuss.

Homework #1-4: Practice with Graphical Analysis



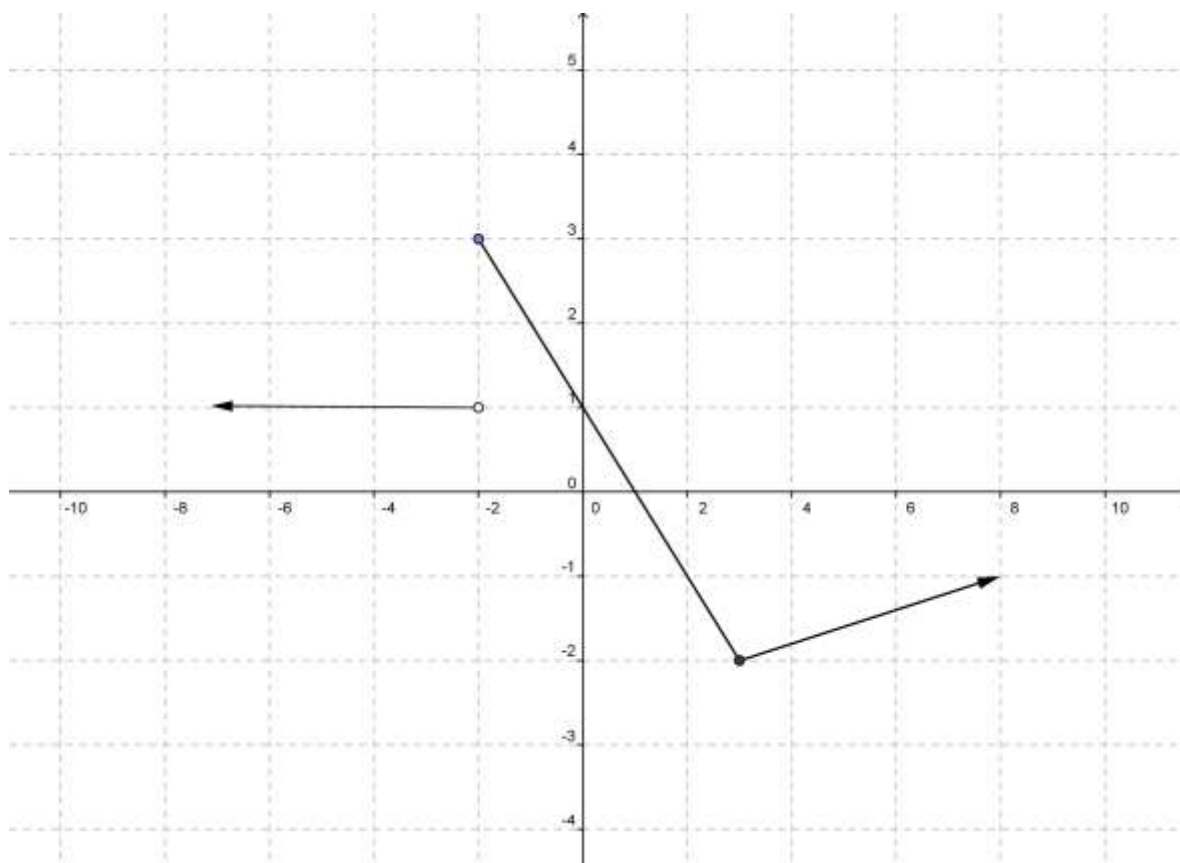
Domain:

Range:



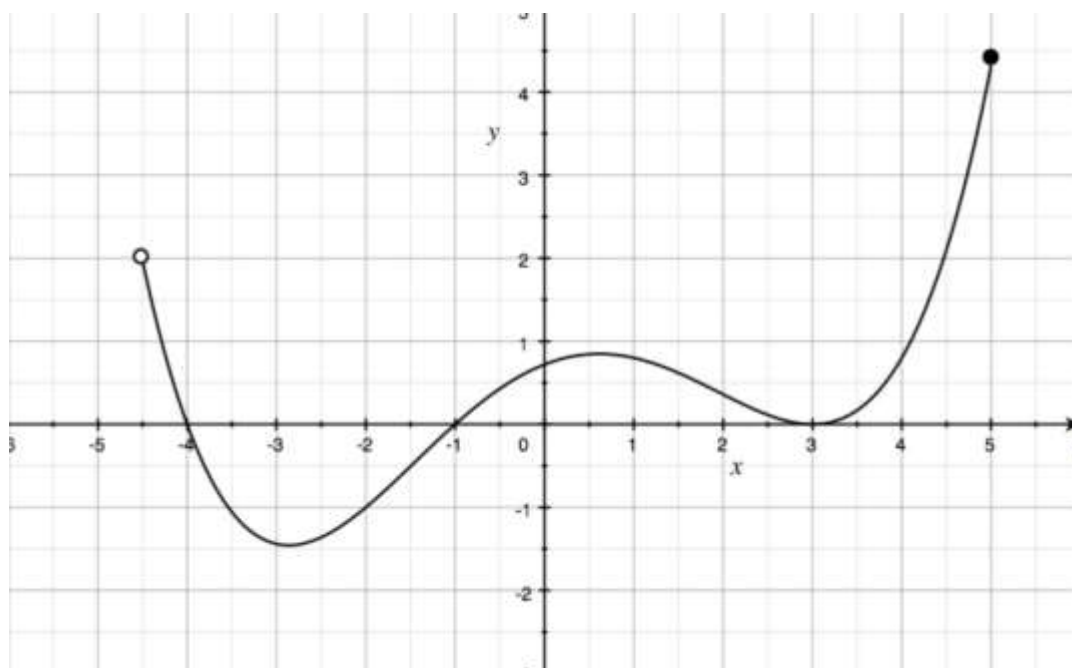
Domain:

Range:



Domain:

Range:



Domain:

Range:

Pre-AP Algebra 2**1-4 – Pairwork – Domain & Range & Graphical Analysis**

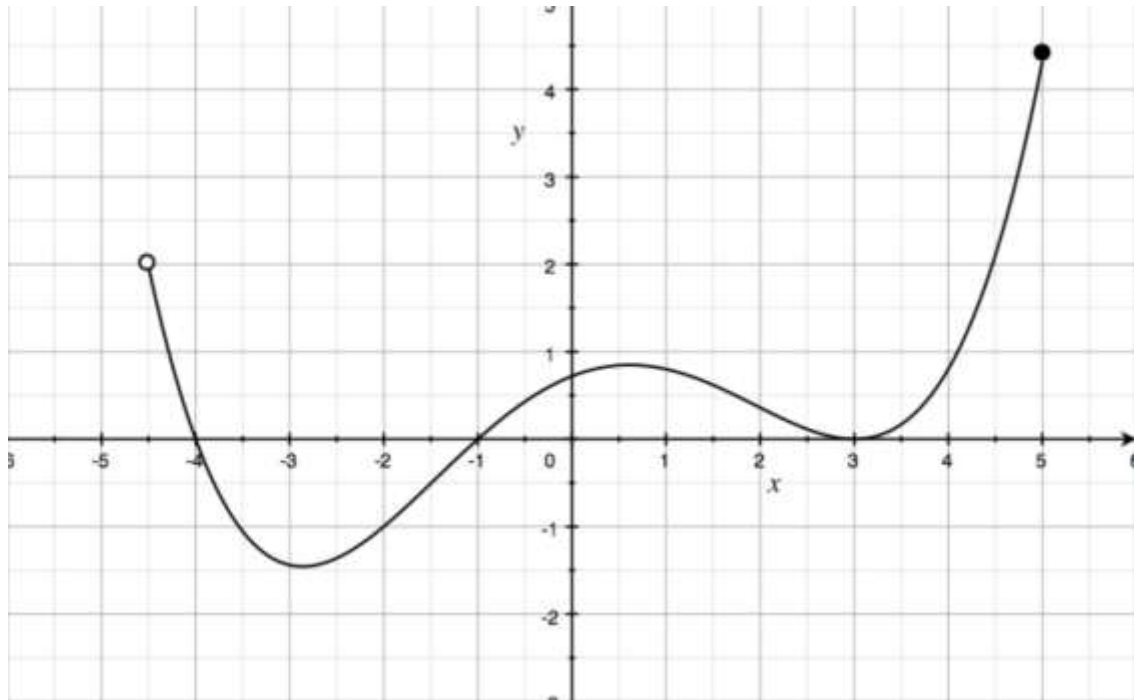
Part 1: Domain & Range

Looking at the sorting cards from the previous activity fill in the following chart.

Card #	Discrete or Continuous	Domain	Range
1			
2			
3			
4			
5			
6			
7			
8			

Compare and contrast the domain and range of discrete and continuous functions.

Part 2: Reading a Graph (Graphical Analysis)



Note: for some answers, you will need to estimate.

- 1) Find the domain and range.
- 2) $f(-4) =$ $f(0) =$ $f(5) =$ $f(f(4.5)) =$
- 3) Is each one positive or negative? $f(-3)$ $f(-0.5)$ $f(-4.1)$
- 4) True or false: $f(3) > 0$
- 5) Over what **intervals** is $f(x) \geq 0$?
- 6) Over what **intervals** is $f(x) > 0$?
- 7) Over what **intervals** is $f(x) < 0$?
- 8) How many times do each of the following lines intersect the graph of f ?
 - a. $y = 1$
 - b. $y = 2$
 - c. $y = -2$
 - d. $y = \frac{1}{2}$
- 9) For what values of x does:
 - a. $f(x) = 0$
 - b. $f(x) = 2$
 - c. $f(x) = -1$

Part 3: Graphing a piece of a line:

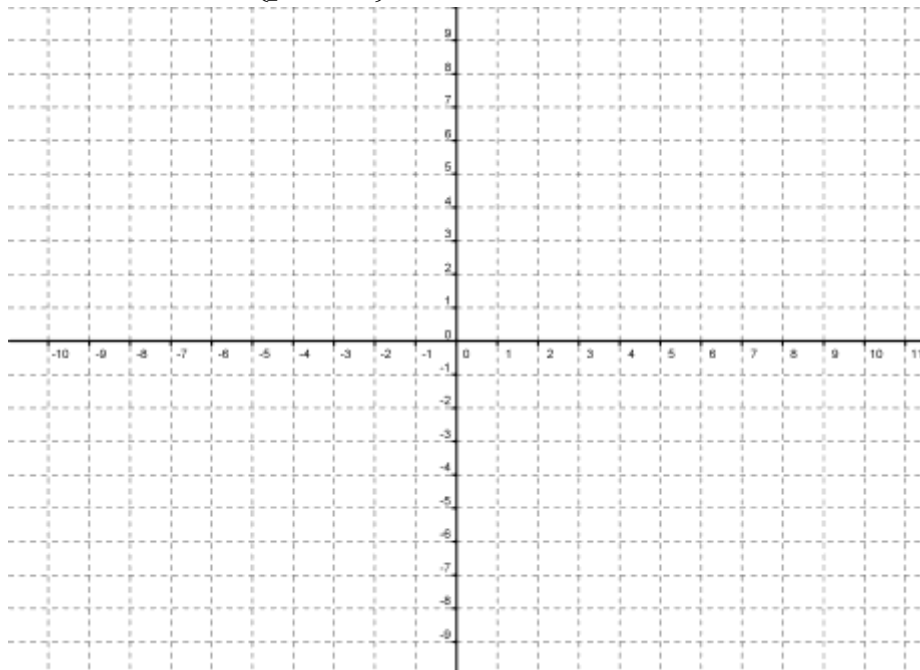
Directions

1. **Graph** the line lightly in pencil. Use a ruler.
2. Look at the domain. **Erase** any piece of the line that is **outside** of the domain.
3. Draw a circle (either open or closed) at the **endpoint(s)**.
4. Determine the **range**.

1) $y = 2x - 3$

Domain = $\{[-1, +\infty)\}$

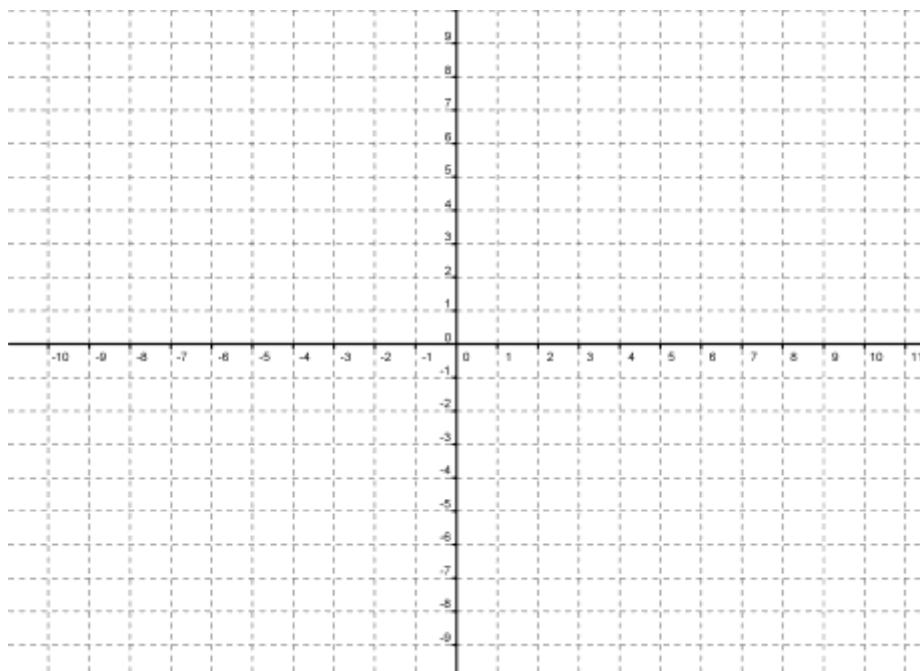
Range =



2) $y = -\frac{1}{3}x + 5$

Domain = $\{(-6, 6)\}$

Range =



Check for Understanding

Can you complete these problems correctly by yourself

For some answers, you may need to estimate.

1)

a) Find the domain and range.

b) Find $f(-2)$, $f(4)$, and $f(f(-1))$.

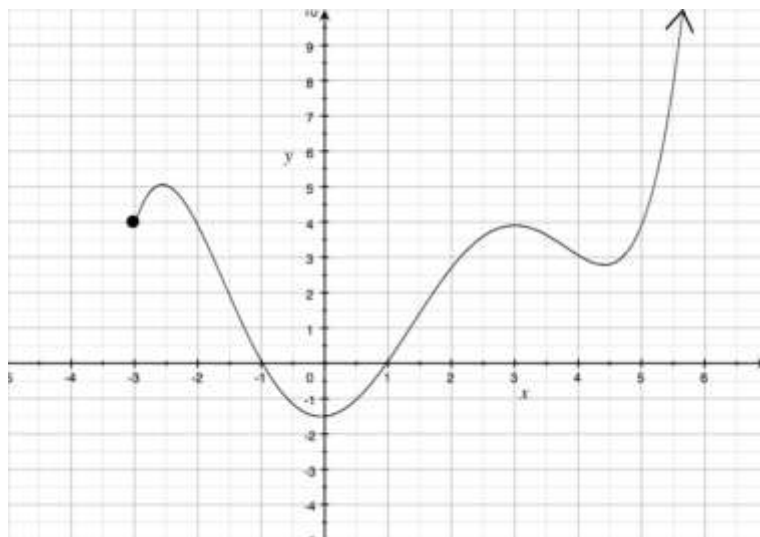
c) Over what interval is $f(x) \leq 0$?

d) Over what interval is $f(x) > 0$?

f) How many times does the line $y = 3.2$ intersect $f(x)$?

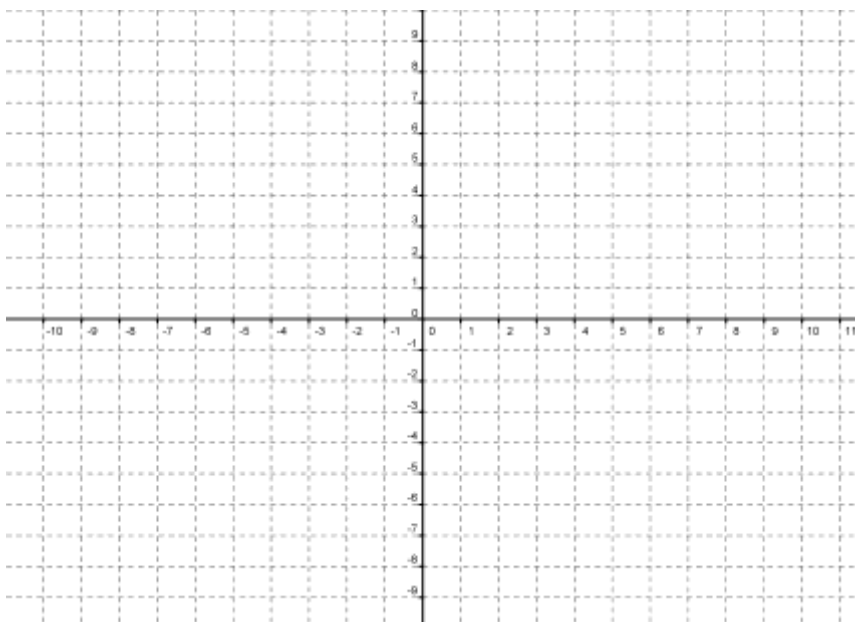
e) What is the value of $f(x)$ when $x = -3$?

g) For what values of x does $f(x) = 0$?



2)

Graph the line $y = \frac{1}{2}x - 4$ in the domain $\{[-2, 6]\}$. What is the range?



Spiral

What do you remember from Algebra 1? (these are skills we will need in Algebra 2) You also need to remember what we have already learned in this unit.

- 1) Solve for x . Graph the solution on a number line. Write the solution in interval notation (where applicable)**

a. $|x - 2| = 3$

b. $|x - 2| < 3$

c. $|x - 2| \geq 3$

d. $3|x + 4| + 18 = 6$

e. $|3x + 2| > -7$

f. $|3x + 2| \leq -7$

- 2) Find the equation of the lines for the following situations.**

a. Slope of 4 and goes through the point (2, -3)

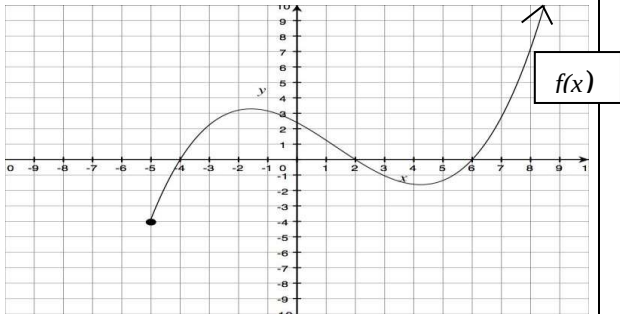
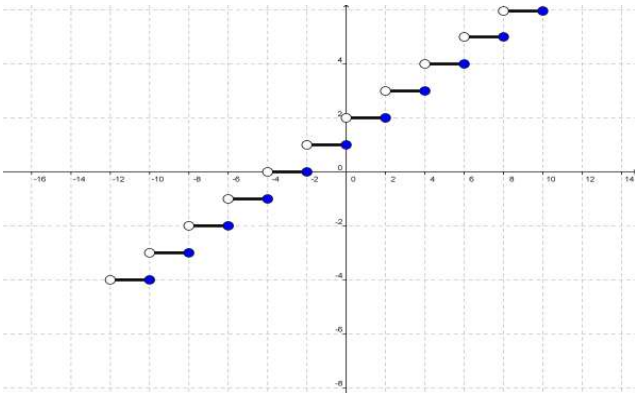
b. Passes through the points (4, 6) and (-5, 7)

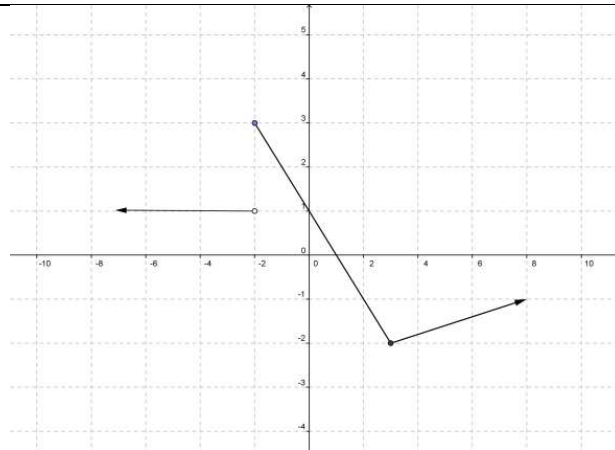
c. Passes through the midpoint of the segment whose endpoints are (4, 8) and (-2, 6) and is perpendicular to that segment.

- 3) Solve the systems of equations.**

a.
$$\begin{cases} y = 4x - 1 \\ 2x + y = 14 \end{cases}$$

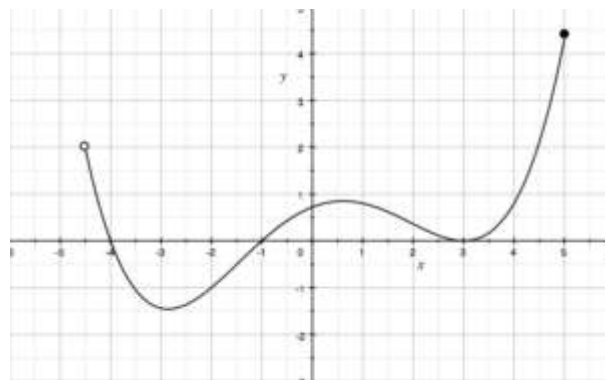
b.
$$\begin{cases} \frac{2}{3}x + 5y = 16 \\ -2x - 7y = -16 \end{cases}$$

Concepts	Examples	Background Information
	 Domain: Range:  Domain: Range:	



Domain:

Range:



Domain:

Range: