

Name: _____

Chapter 3: ALGEBRA STUDY GUIDE

Is the following a function?

x	y
-2	1
-1	1
1	3
2	3

Determine the domain and range:

Domain:

Range:

Is the following a function?

x	y
-5	-2
-1	3
-1	6
2	9

Determine the domain and range:

Domain:

Range:

Is the following a function?

$\{(1, 1), (2, 0), (3, 3), (4, 3), (5, 3)\}$

Determine the domain and range:

Domain:

Range:

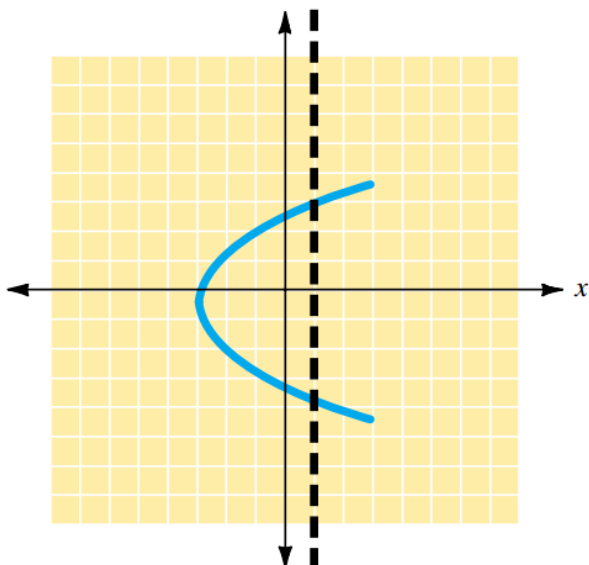
Is the following a function?

$\{(0, -1), (2, 3), (2, 6), (4, 2), (6, 3)\}$

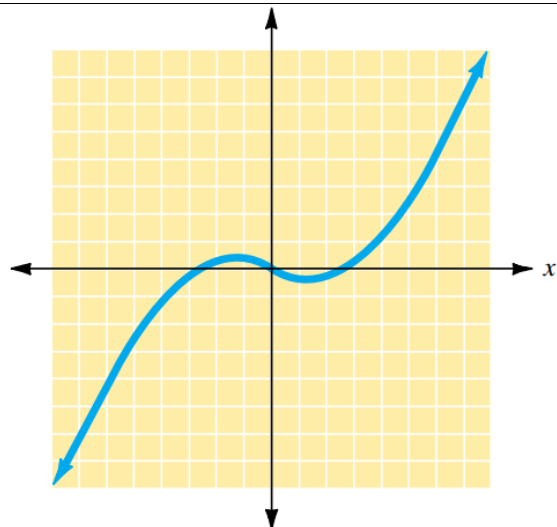
Determine the domain and range:

Domain:

Range:



Is the blue line a function?



Is the blue line a function?

In Exercises 1 to 8, determine which of the relations are also functions.

1. $\{(1, 6), (2, 8), (3, 9)\}$

2. $\{(2, 3), (3, 4), (5, 9)\}$

3. $\{(-1, 4), (-2, 5), (-3, 7)\}$

4. $\{(-2, 1), (-3, 4), (-4, 6)\}$

5. $\{(1, 3), (1, 2), (1, 1)\}$

6. $\{(2, 4), (2, 5), (3, 6)\}$

7. $\{(-1, 1), (2, 1), (2, 3)\}$

8. $\{(2, -1), (3, 4), (3, -1)\}$

In Exercises 9 to 14, decide whether the relation is a function in each table of values.

9.

x	y
3	1
-2	4
5	3
-7	4

10.

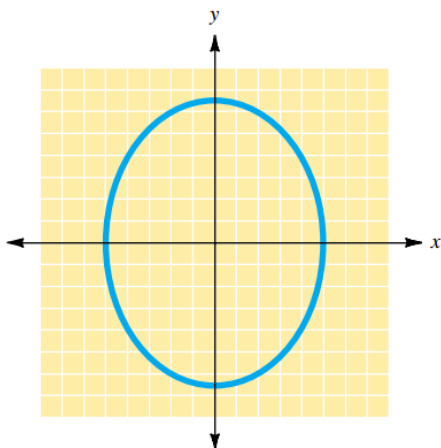
x	y
-2	3
1	4
5	6
2	-1

11.

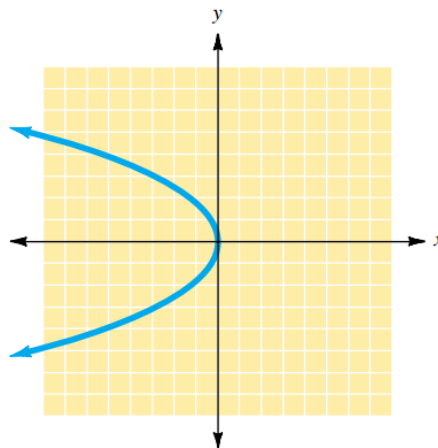
x	y
2	3
4	2
2	-5
-6	-3

Are the following graphs functions?

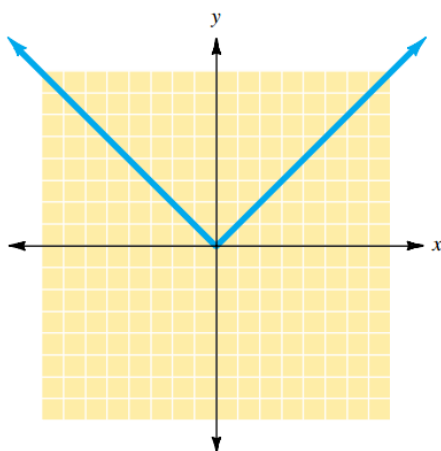
23.



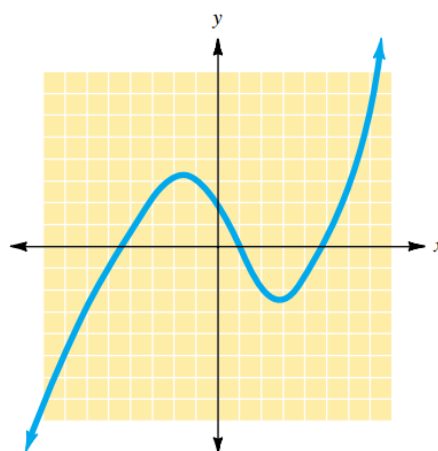
24.



25.



26.



Complete the function table:

1)

$f(x)$	$3 + 2x$	$x - 5$	$-3x + 7$	$7x - 8$	x^2
$f(-4)$					
$f(-2)$					
$f(1)$					
$f(3)$					
$f(5)$					

2)

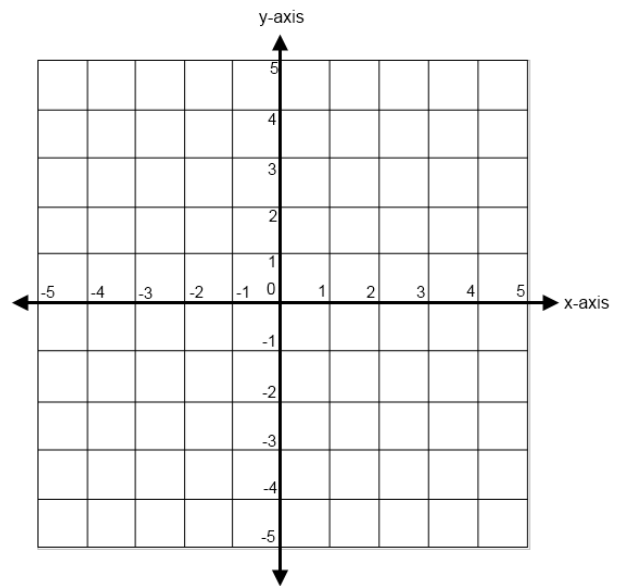
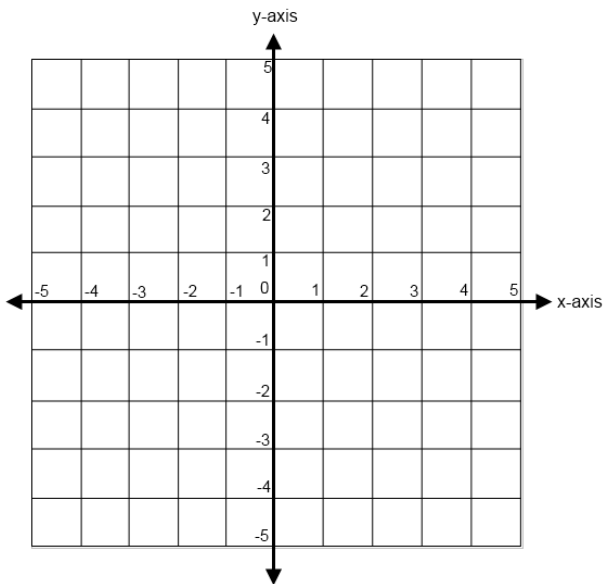
$f(x)$	$6 - 5x$	$x - 9$	x^3	$2x - 5$	$12x + 3$
$f(-3)$					
$f(-2)$					
$f(0)$					
$f(1)$					
$f(2)$					

$$y = \frac{3}{4}x - 2$$

x	y
-8	
-4	
0	
4	

$$y = 4x$$

x	y
-3	
-2	
2	
3	

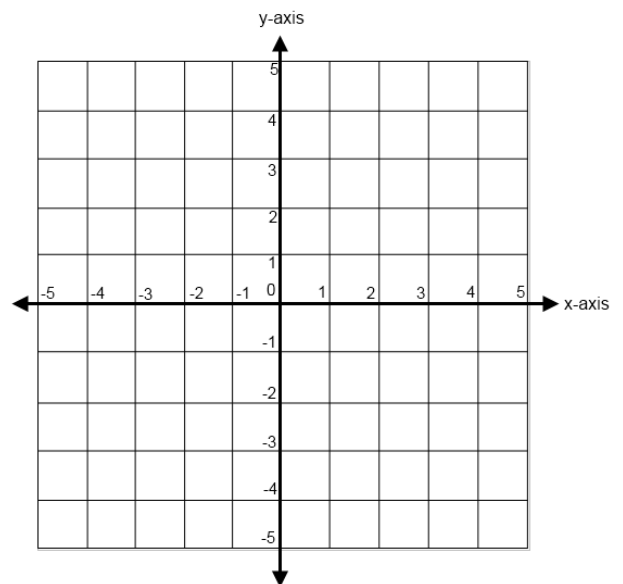
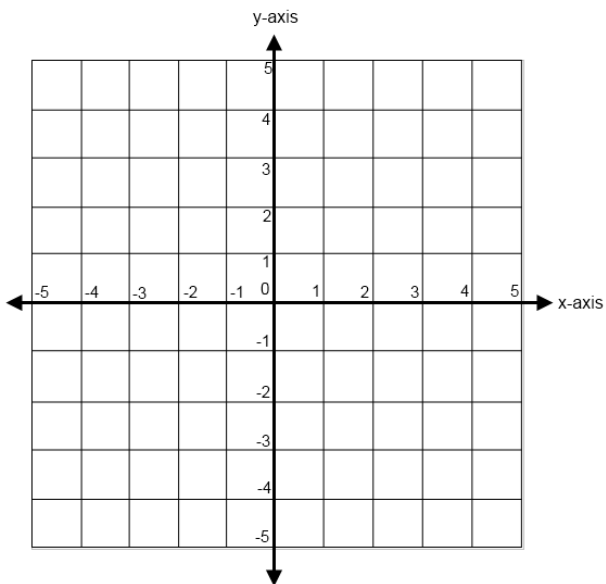


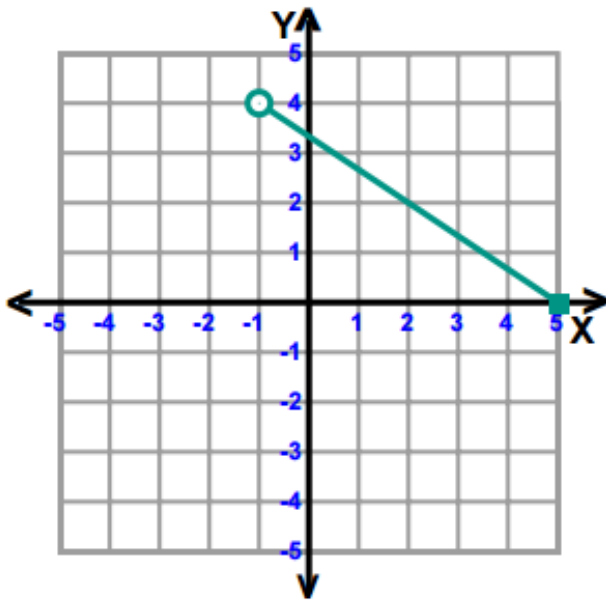
$$y = -x$$

x	y
-2	
0	
2	
3	

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

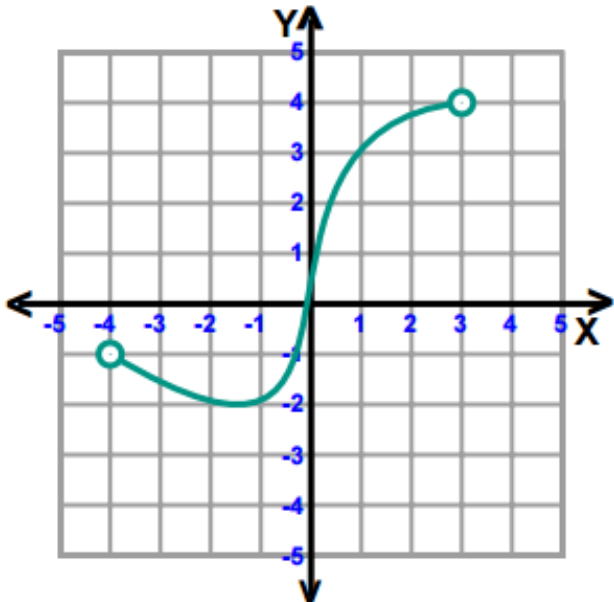
x	y
-3	
0	
3	
9	





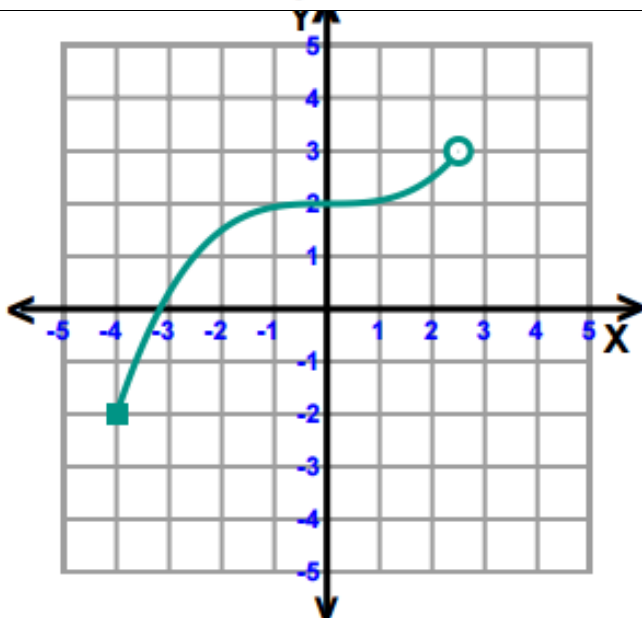
Domain: _____

Range: _____



Domain: _____

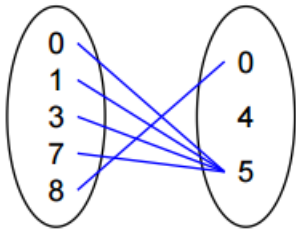
Range: _____



Domain: _____

Range: _____

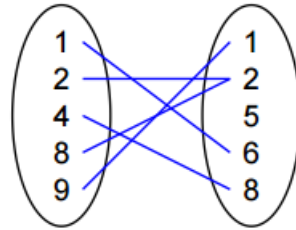
Are the following Functions?
State the Domain and Range:



Function: _____

Domain:

Range:



Function: _____

Domain:

Range:

BUSINESS Brady's Books is a retail store. The store's average daily profits y are given by the equation $y = 2x + 3$ where x is the number of hours available for customer purchases. Brady's adds an online shopping option. Write an equation in slope-intercept form to show a new profit line with the same profit rate containing the point $(0, 12)$.

GEOMETRY A parallelogram is created by the intersections of the lines $x = 2$, $x = 6$, $y = \frac{1}{2}x + 2$, and another line. Find the equation of the fourth line needed to complete the parallelogram. The line should pass through $(2, 0)$.

ARCHAEOLOGY An archaeologist is comparing the location of a jeweled box she just found to the location of a brick wall. The wall can be represented by the equation $y = -\frac{5}{3}x + 13$. The box is located at the point $(10, 9)$. Write an equation representing a line that is perpendicular to the wall and that passes through the location of the box.

Parallel and Perpendicular Lines

$$Y = \frac{1}{4}x - 1$$

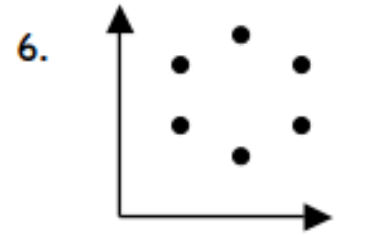
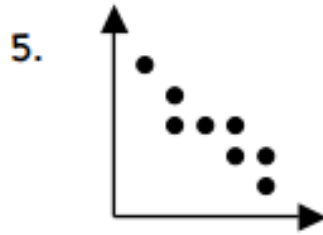
(2,0)

$$Y = 2x + 3$$

(1,2)

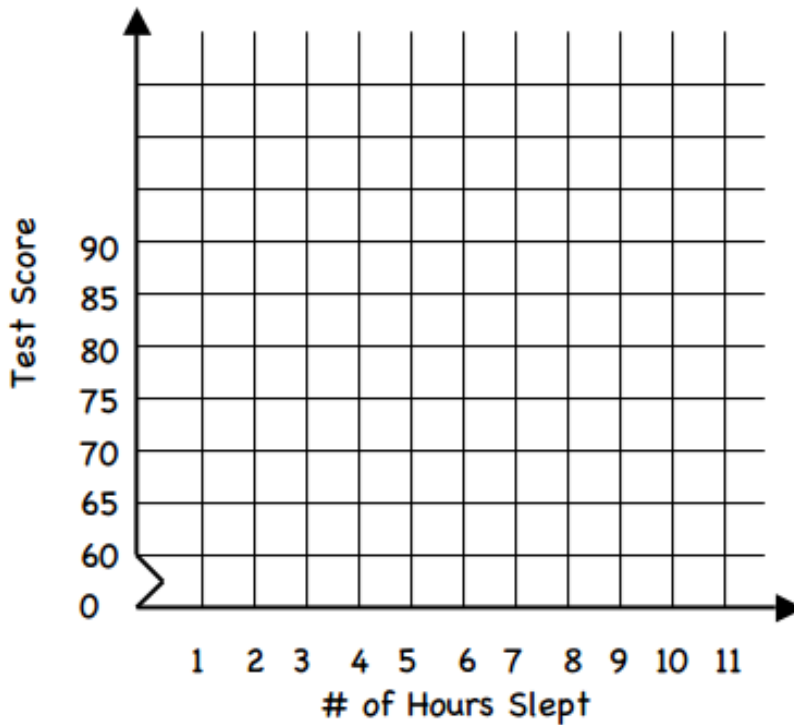
Scatter Plots

Classify the scatter plots as having a positive, negative, or no correlation.



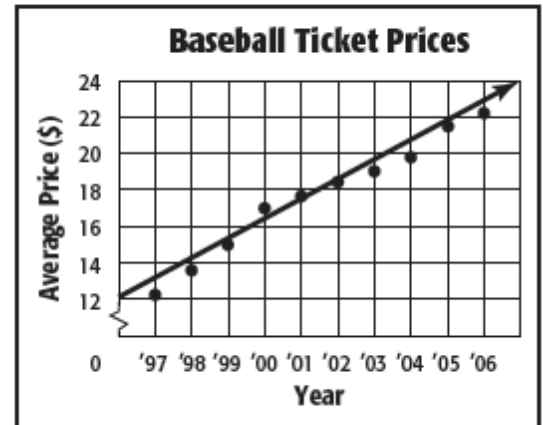
7. A history teacher asked her students how many hours of sleep they had the night before a test. The data below shows the number of hours the student slept and their score on the exam. Plot the data on a scatter plot.

Hours Slept	8	7	7	8	6	5	7	4	9	7
Test Score	83	86	74	88	76	63	90	60	89	81



5. **BASEBALL** The scatter plot shows the average price of a major-league baseball ticket from 1997 to 2006.

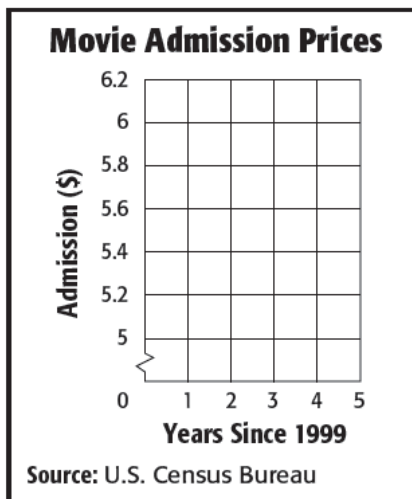
- Determine what relationship, if any, exists in the data. Explain.
- Use the points (1998, 13.60) and (2003, 19.00) to write the slope-intercept form of an equation for the line of fit shown in the scatter plot.
- Predict the price of a ticket in 2009.



Source: Team Marketing Report, Chicago

Refer to the table for Exercises 1–3.

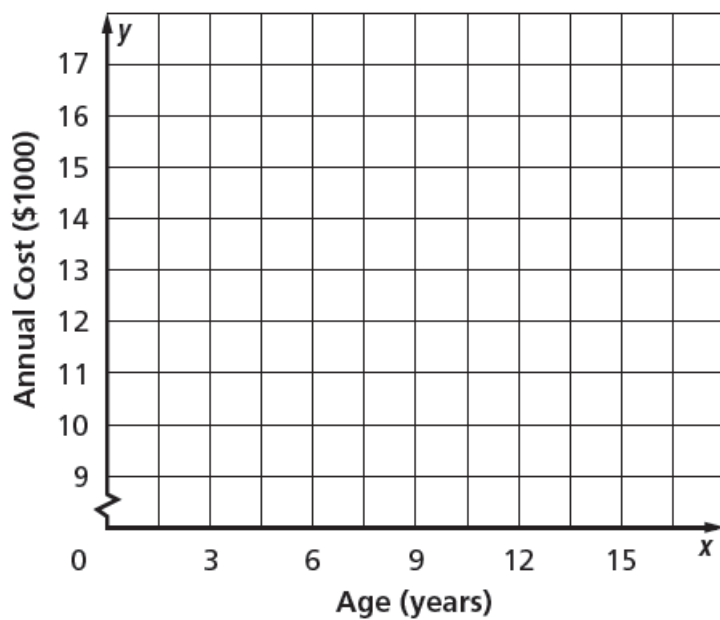
1. Draw a scatter plot.
2. Draw a line of fit for the data.
3. Write the slope-intercept form of an equation for the line of fit.



Years Since 1999	Admission (dollars)
0	\$5.08
1	\$5.39
2	\$5.66
3	\$5.81
4	\$6.03

2. FAMILY The table shows the predicted annual cost for a middle income family to raise a child from birth until adulthood. Draw a scatter plot and describe what relationship exists within the data.

Cost of Raising a Child Born in 2003					
Child's Age	3	6	9	12	15
Annual Cost (\$)	10,700	11,700	12,600	15,000	16,700



INVERSE FUNCTIONS

4. $f(x) = 16 - \frac{1}{3}x$

5. $f(x) = 3(x - 5)$

6. $f(x) = -15 - \frac{2}{5}x$