Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra II Practice Test Chapter 1

Multiple Choice
Identify the choice that best completes the statement or answers the question.

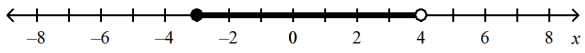
____ **1.** (5 points) Order the numbers $2, -\frac{5}{7}, \sqrt{2}, \text{ï } 0.6448, \pi$ from least to greatest.

A) $2, -\frac{5}{7}, \sqrt{2}, \text{ï } 0.6448, \pi$
B) $-\frac{5}{7}, \text{ï } 0.6448, \sqrt{2}, 2, \pi$
C) $-\frac{5}{7}, \text{ï } 0.6448, \sqrt{2}, \pi, 2$
D) $\pi, 2, \sqrt{2}, \text{ï } 0.6448, -\frac{5}{7}$

____ **2.** (5 points) Use interval notation to represent the set of numbers $\text{ï } 7 \le x \le 3$.

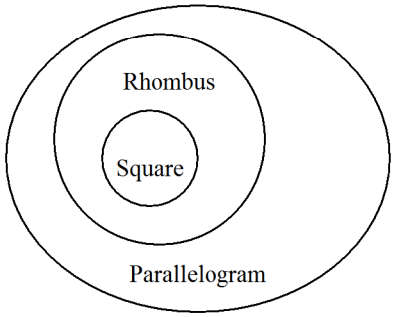
A) (ï 7, 3)
B) (3, ï 7]
C) [ï 7, 3]
D) {ï 7, 3}

____ **3.** (5 points) Write the set in set-builder notation.



A) $\{x | -3 \le x < 4\}$
B) [ï 3, 4)
C) $\{x | -3 < x < 4\}$
D) [ï 3, 4]

____ **4.** (5 points) What statement can be determined from the diagram?



A) Every square is a rhombus.
B) Every rhombus is a square.
C) No parallelogram is a rhombus.
D) No parallelogram is a square.

____ **5.** (5 points) Estimate $\sqrt{43}$ to the nearest tenth.

A) 6.5
B) 6.6
C) 6.7
D) 7.0

____ **6.** (5 points) Simplify the expression $\sqrt{\frac{50}{98}}$.

A) $\frac{5}{7}\sqrt{2}$
C) $\frac{25}{49}$
B) $\frac{\sqrt{25}}{\sqrt{49}}$
D) $\frac{5}{7}$

____ **7.** (5 points) Simplify $\frac{\sqrt{7}}{\sqrt{5}}$ by rationalizing the denominator.

A) $\frac{\sqrt{35}}{5}$
C) $\frac{\sqrt{7}}{5}$
B) $\frac{7}{\sqrt{35}}$
D) $\frac{7}{5}$

____ **8.** (5 points) Add.
$10\sqrt{3} + 2\sqrt{3}$

A) 12
C) $8\sqrt{3}$
B) $8\sqrt{6}$
D) $12\sqrt{3}$

____ **9.** (5 points) Write an algebraic expression to represent the number of letters Isabel wrote.
Isabel wrote 10 letters to friends each month for x months in a row.

A) $10x$
C) $\frac{10}{x}$
B) $10 - x$
D) $10 + x$

____ **10.** (5 points) Evaluate the expression $g + s$ for $g = 9$ and $s = 3$.

A) 12
C) 27
B) 6
D) 13

____ **11.** (5 points) Evaluate $6 + x - 9 \bullet 7$ for $x = 7$.

A) 28
C) ï 8
B) ï 50
D) ï 34

____ **12.** (5 points) Simplify the expression $s^2 - 3s + t + 5s^2$.

A) $5s^2 - 3s + t$
C) $2s^2 + t$
B) $3s^2 + t$
D) $6s^2 - 3s + t$

____ **13.** (5 points) Murphyôs motorcycle gets 55 miles per gallon of gas on the highway and 45 miles per gallon in the city. The motorcycle holds 8 gallons of gas. Write and simplify an expression for the total number of miles Murphy can travel if he has a full tank of gas but uses 2 gallons on the highway and the rest in the city.

A) $10x + 36$; 270 miles
C) $36x + 10$; 110 miles
B) $10x + 36$; 380 miles
D) $36x + 10$; 420 miles

____ **14.** (5 points) Write $-(3z)^3(u-3)^2$ in expanded form.

A) $-(3z)(3z)(u-3)(u-3)(u-3)$
C) $-27z^3(u^2-6u+9)$
B) $-27z^3u^2+162z^3u-243z^3$
D) $-(3z)(3z)(3z)(u-3)(u-3)$

____ **15.** (5 points) Simplify the expression $(4)^{-1}(2)^0$.

A) $\frac{1}{2}$
C) ï 4
B) $\frac{1}{4}$
D) 0

____ **16.** (5 points) Simplify the expression $(-5a)^2(a^2b)^5$. Assume all variables are nonzero.

A) $25a^{20}b^5$
C) $-25a^{12}b^5$
B) $25a^{12}b^5$
D) $-25a^{20}b^5$

____ **17.** (5 points) Simplify the expression $\frac{6.61\times10^9}{2.16\times10^{-3}}$. Write the answer in scientific notation.

A) $3.06\times10^{ï\,12}$
C) 3.06×10^6
B) $3.06\times10^{ï\,3}$
D) 3.06×10^{12}

____ **18.** (5 points) Write the expression $(5xy)^4$ in expanded form.

A) $(5xy)(5xy)(5xy)(5xy)$
C) $20xy$
B) $(5xy)+(5xy)+(5xy)+(5xy)$
D) $4(5xy)(5xy)(5xy)(5xy)$

____ **19.** (5 points) Simplify the expression $\left(\frac{5.64\times10^7}{15.792\times10^4}\right)^2$. Write the answer in scientific notation.

A) 1.28×10^5
C) 1.28×10^6
B) 1.03×10^9
D) 1.03×10^5

____ **20.** (5 points) Give the domain and range of the relation.

x	*y*
2	5
8	17
0	0
ï 3	ï 5

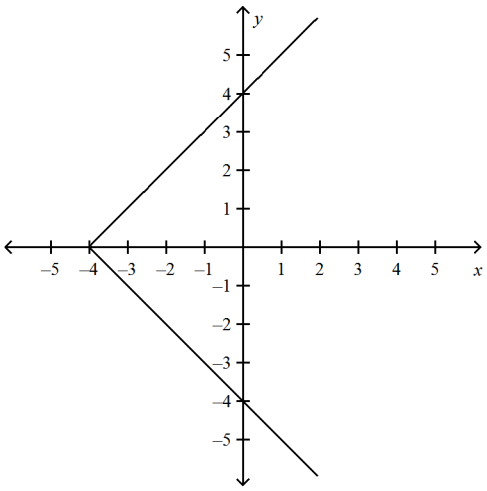
A) D: {ï 3, 0, 2, 8}; R: {ï 5, 0, 5, 17}
B) D: {ï 5, 0, 5, 17}; R: {ï 3, 0, 2, 8}
C) D: {2, 8, ï 3, 5, 17, ï 5}; R: {0}
D) D: {ï 3, 2, 8}; R: {ï 5, 5, 17}

____ **21.** (5 points) Determine whether the relation is a function.

Antonio's age (years)	11	12	13	14	15	16
Antonio's height (inches)	60	61	62	67	69	69

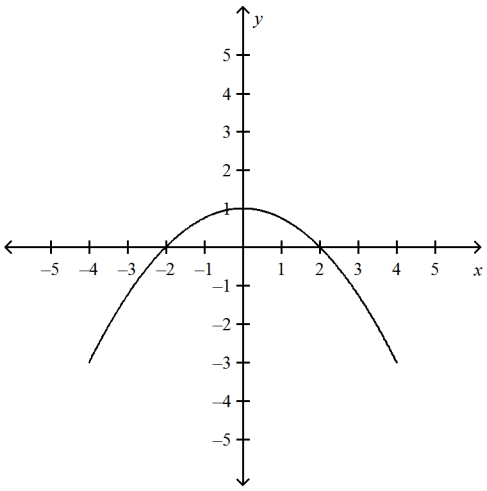
A) No, the relation is not a function.
B) Yes, the relation is a function.

____ **22.** (5 points) Use the vertical-line test to determine whether the relation is a function. If not, identify two points a vertical line would pass through.



A) Yes, the relation is a function.
B) No, the relation is not a function.
(0, 4) and (0, ï 4)

____ **23.** (5 points) Which is an element of the range of the graphed function?



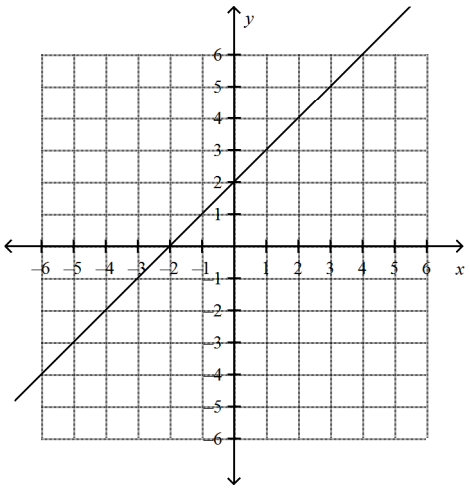
A) 3
B) 2
C) 4
D) 0

____ **24.** (5 points) For $f(x) = -5x - 2$, evaluate $f(5)$.

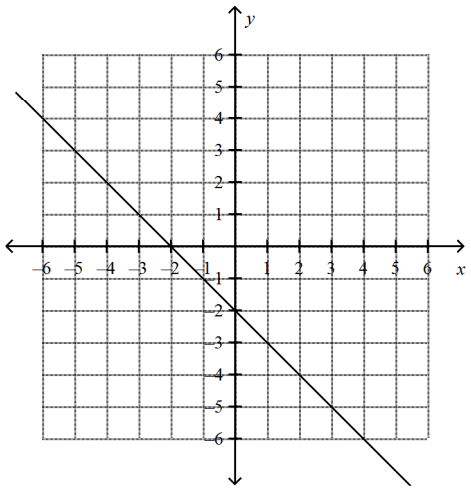
A) 23
B) ï 15
C) ï 27
D) ï 32

____ **25.** (5 points) Graph the function $f(x) = x + 2$.

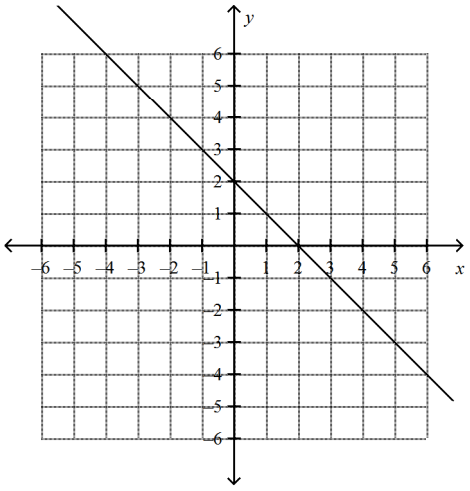
A)



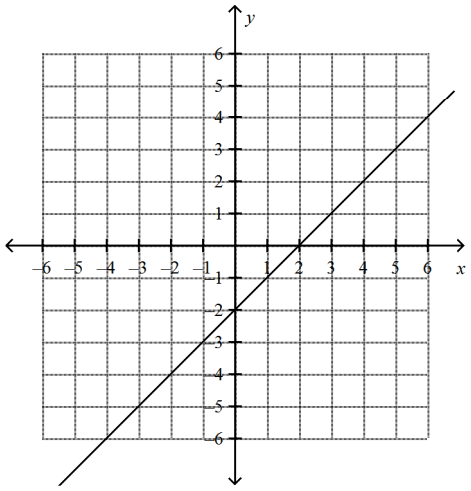
C)



B)



D)



____ **26.** (5 points) The commercial jet that travels from Houston to Miami averages about 375 mi/h. The air distance from Houston to Miami is 968 miles. Write a function to represent the distance *d* remaining on the trip *t* hours after takeoff.

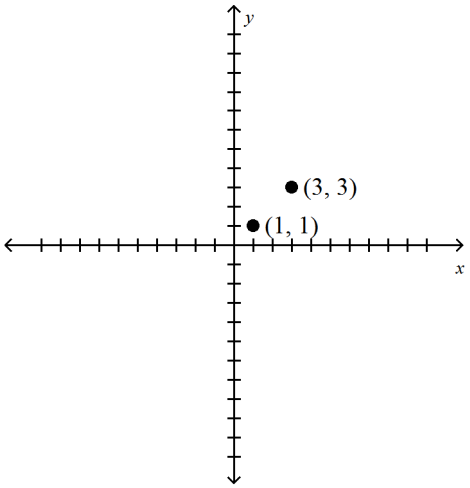
A) $d = 375t + 968$
B) $d = 375 - 968t$
C) $d = 968t + 375$
D) $d = 968 - 375t$

____ **27.** (5 points) Evaluate $k(2q^2 + 3q)$ for $k(x) = 8x + 7q$.

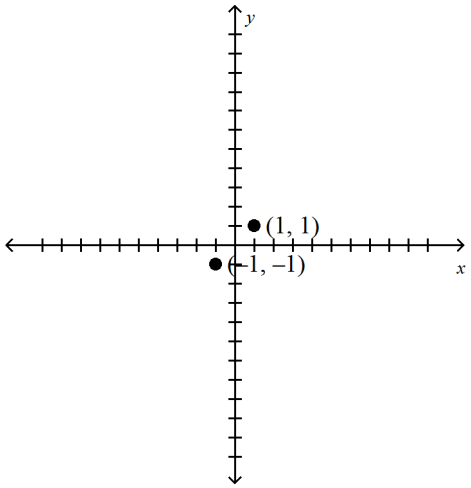
A) $2q^2 + 21q$
B) $16q^2 + 21q$
C) $2q^2 + 10q$
D) $16q^2 + 31q$

____ **28.** (5 points) Translate the point (1, 1) right 2 units and down 2 units. Give the coordinates of the translated point.

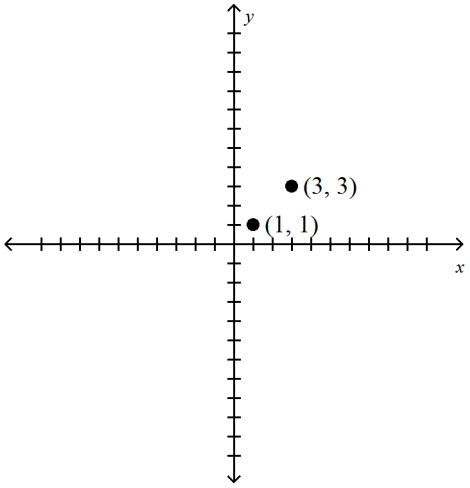
A)



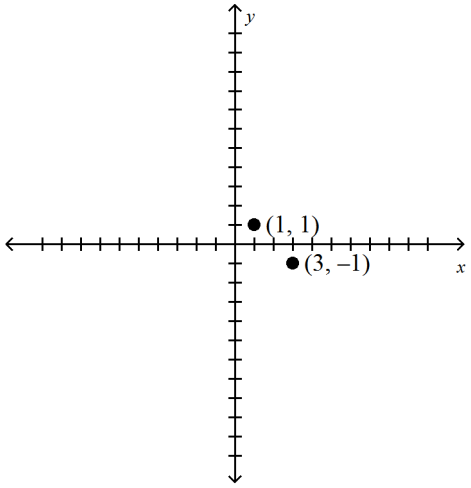
C)



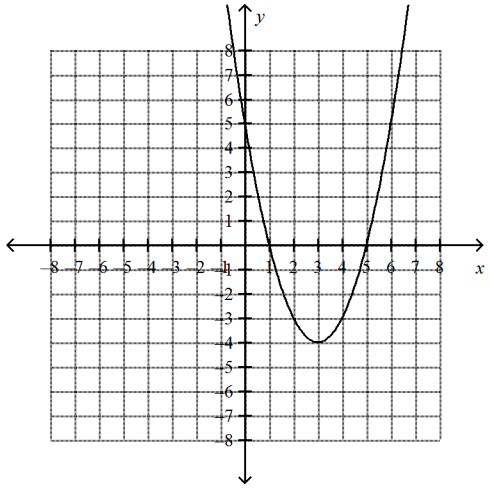
B)



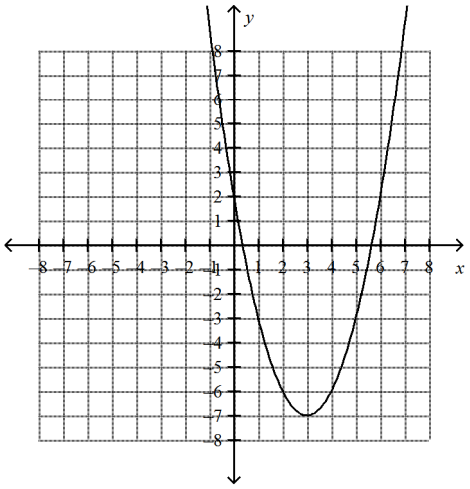
D)



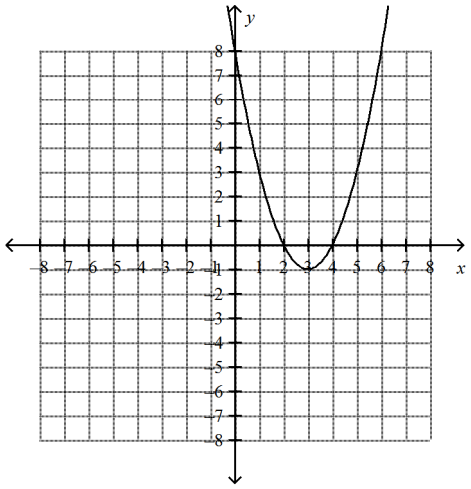
____ **29.** (5 points) Use a table to translate the graph 3 units to the left.



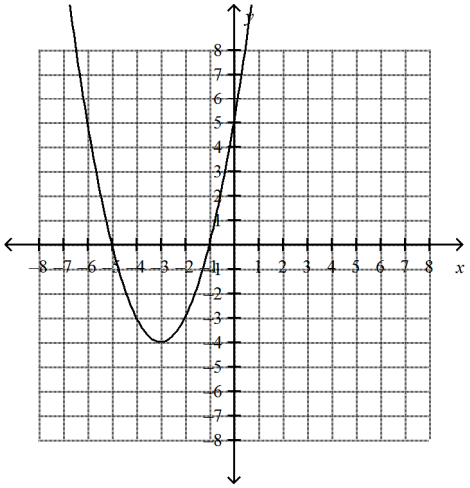
A)



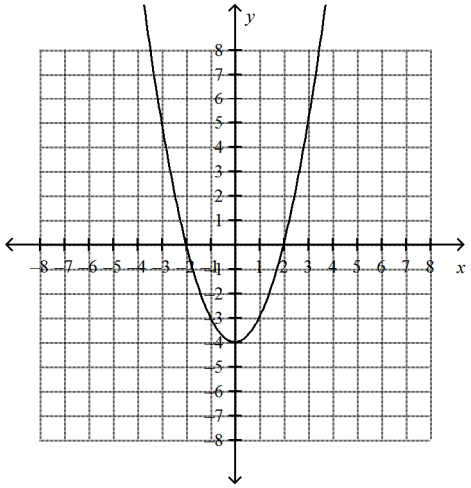
C)



B)

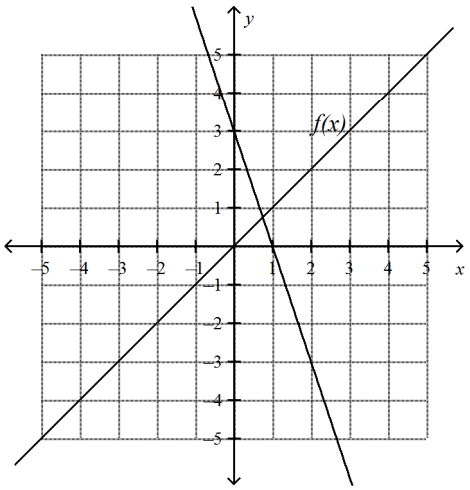


D)

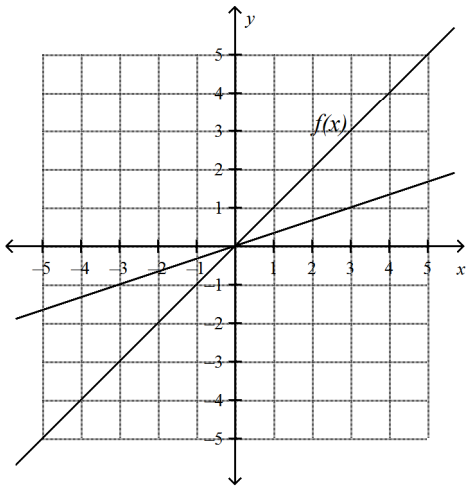


____ **30.** (5 points) Use a table to perform a vertical stretch of $f(x) = x$ by a factor of 3. Graph the transformed function on the same coordinate plane as the original function.

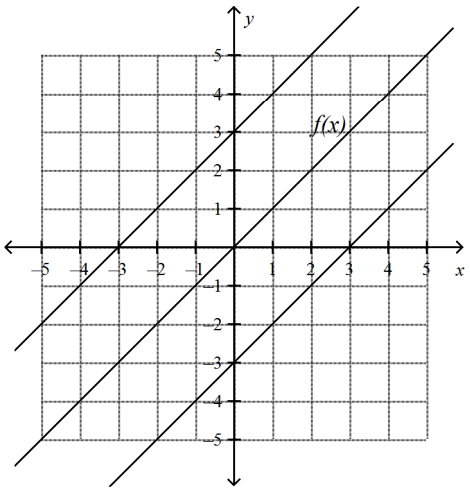
A)



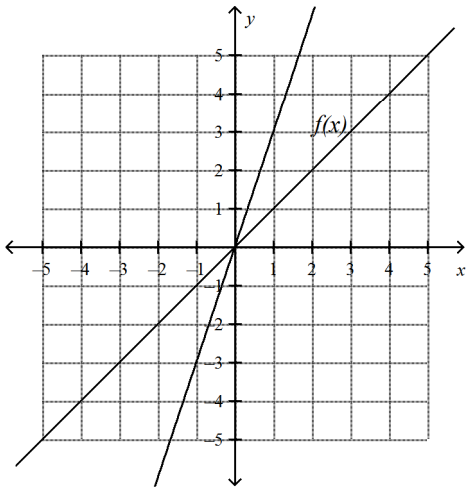
C)



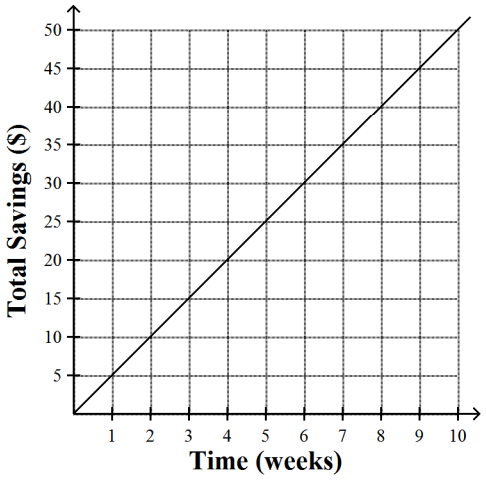
B)



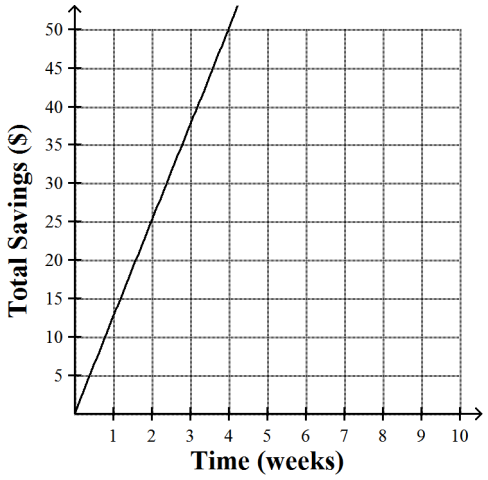
D)



____ **31.** (5 points) The graph shows Carmenôs savings each week. She decides to save 2.5 times as much money each week. Sketch a graph that represents the new savings and identify the transformation of the original graph that it represents.

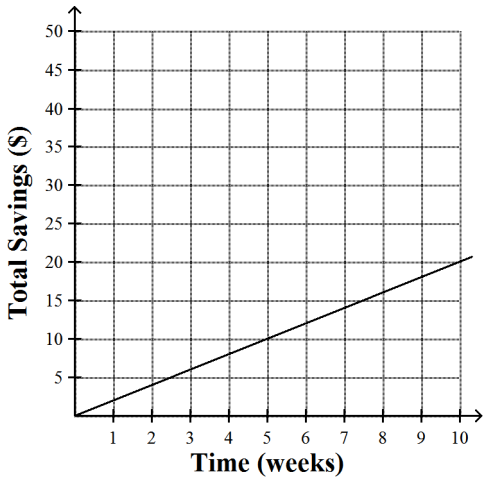


A)



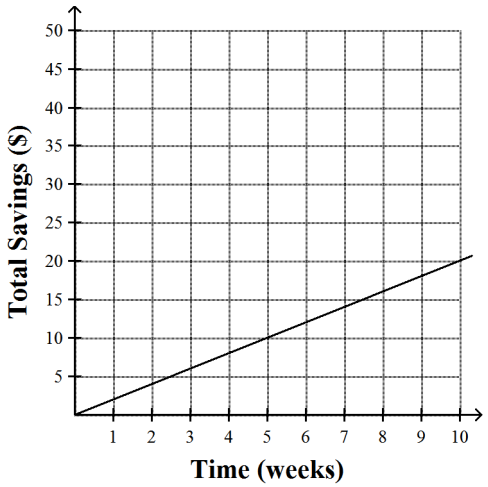
The graph represents a vertical stretch by a factor of 2.5.

B)



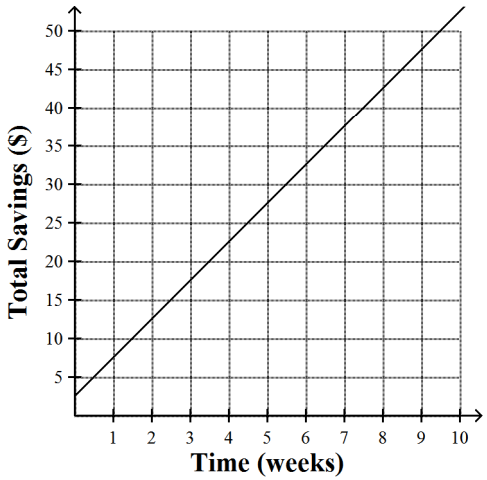
The graph represents a horizontal stretch by a factor of 2.5.

C)



The graph represents a vertical compression by a factor of $\frac{1}{2.5}$.

D)



The graph represents a vertical translation up 2.5 units.

____ **32.** (5 points) Fabric that regularly sells for $4.90 per square foot is on sale for 10% off. Write an equation that represents the cost of s square feet of fabric during the sale. Write a transformation that shows the change in the cost of fabric.

A) $(4.90 - 0.49)s$; $(x, y) \rightarrow (x, 0.9y)$

B) $4.90s - 10$; $(x, y) \rightarrow (x, 0.9y)$

C) $4.90s - 10$; $(x, y) \rightarrow (x, 0.1y)$

D) $(4.90 - 0.49)s$; $(x, y) \rightarrow (x, 0.1y)$

____ **33.** (5 points) Identify the parent function for $g(x) = (x+3)^3$ and describe what transformation of the parent function it represents.

A) The parent function is the cubic function, $f(x) = x^3$.
$g(x) = (x+3)^3$ represents a vertical translation of the parent function 3 units up.

B) The parent function is the cubic function, $f(x) = x^3$.
$g(x) = (x+3)^3$ represents a horizontal translation of the parent function 3 units to the right.

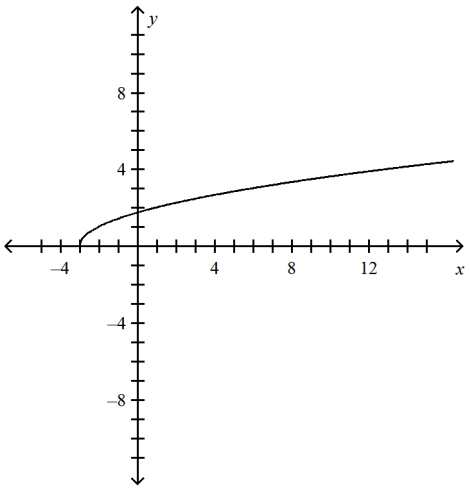
C) The parent function is the cubic function, $f(x) = x^3$.
$g(x) = (x+3)^3$ represents a vertical translation of the parent function 3 units down.

D) The parent function is the cubic function, $f(x) = x^3$.
$g(x) = (x+3)^3$ represents a horizontal translation of the parent function 3 units to the left.

____ **34.** (5 points) Graph the data from the table. Describe the parent function and the transformation that best approximates the data set.

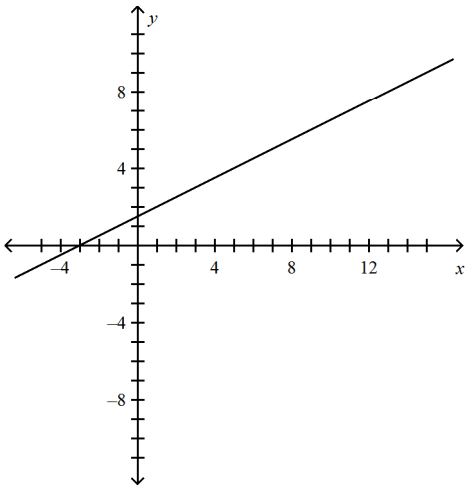
x	ï 3	ï 2	1	6	13
y	0	1	2	3	4

A)



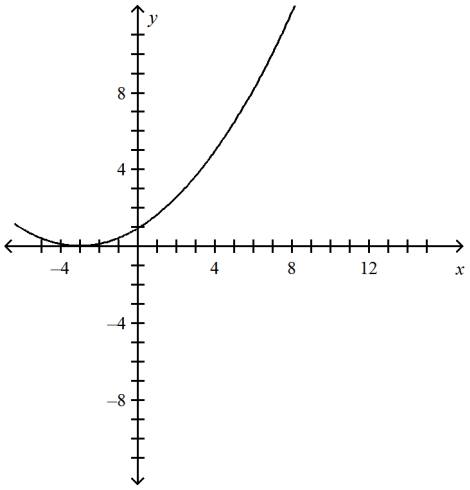
Square root function translated 3 units to the left.

B)



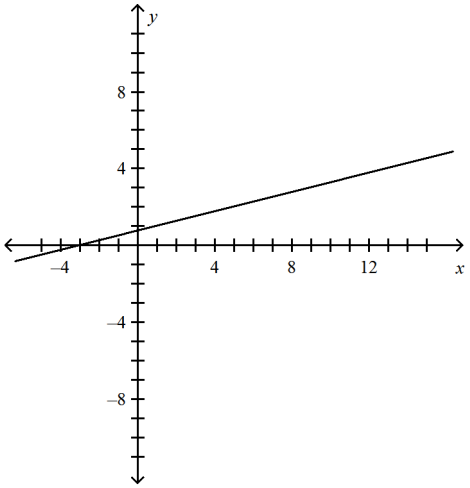
Linear function with a vertical compression of $\frac{1}{2}$ translated 3 units to the left.

C)



Quadratic function translated 3 units to the left.

D)

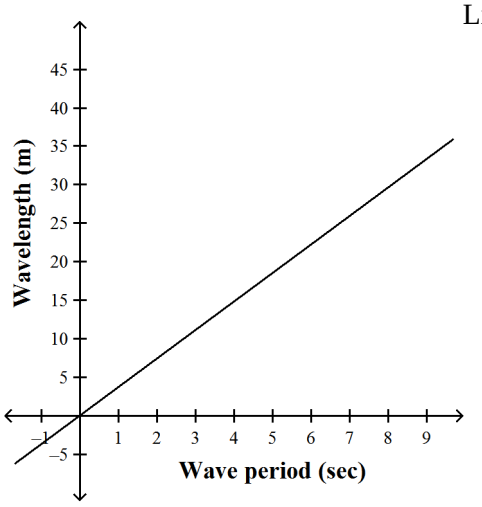


Linear function with a vertical compression of $\frac{1}{4}$ translated 3 units to the left.

____ **35.** (5 points) In the deep ocean, the length of a wave in meters is related to the period of the wave in seconds. Graph the relationship between wave period and wavelength and identify which parent function best describes it. (Hint: Although time cannot be negative, the negative portion of this function has been provided for you.)

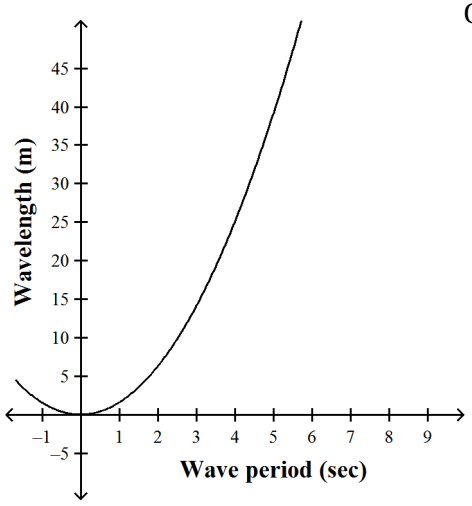
Wave period (sec)	Wavelength (m)
ï 1	1.56
1	1.56
2	6.24
3	14.04
5	39

A) Li



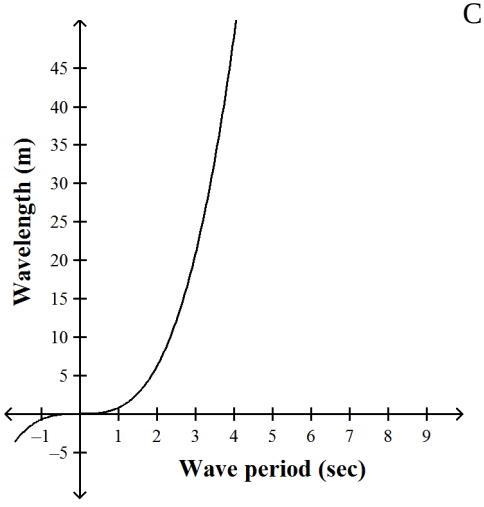
near parent function

C) Q



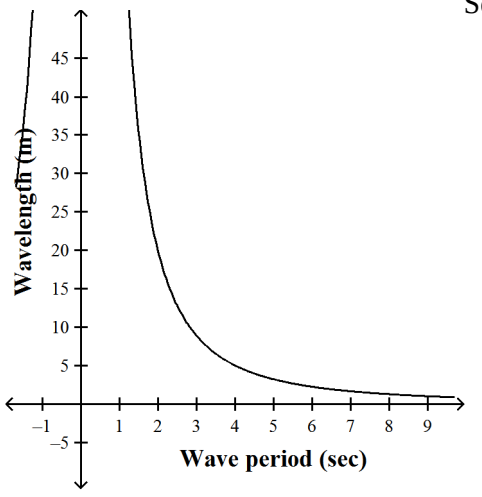
uadratic parent function

B) C



ubic parent function

D) Sq



uare-root parent function

____ **36.** (5 points) For which function is 3 NOT an element of the range?

A) $y = -2x + 4$

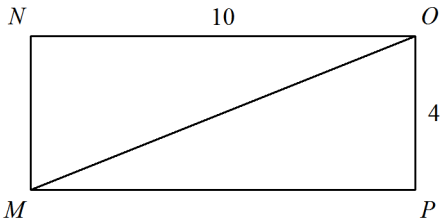
B) $y = x^5$

C) $y = 3$

D) $y = -(-x)^2$

Numeric Response

37. (5 points) By the Pythagorean Theorem, the length d of a diagonal of a rectangle is given by $d = \sqrt{l^2 + w^2}$. Find the length of diagonal $\overline{MO}$ to the nearest tenth.



38. (5 points) What is the value of $3x(y-6)^2$ when $x = 9$ and $y = 3$?

Algebra II Practice Test Chapter 1
Answer Section

MULTIPLE CHOICE

1.	ANS: B	PTS: 5	REF: Page 6
2.	ANS: C	PTS: 5	REF: Page 8
3.	ANS: A	PTS: 5	REF: Page 9
4.	ANS: A	PTS: 5	
5.	ANS: B	PTS: 5	REF: Page 21
6.	ANS: D	PTS: 5	REF: Page 22
7.	ANS: A	PTS: 5	REF: Page 23
8.	ANS: D	PTS: 5	REF: Page 23
9.	ANS: A	PTS: 5	REF: Page 27
10.	ANS: A	PTS: 5	REF: Page 28
11.	ANS: B	PTS: 5	REF: Page 28
12.	ANS: D	PTS: 5	REF: Page 28
13.	ANS: B	PTS: 5	REF: Page 29
14.	ANS: D	PTS: 5	REF: Page 34
15.	ANS: B	PTS: 5	REF: Page 35
16.	ANS: B	PTS: 5	REF: Page 36
17.	ANS: D	PTS: 5	REF: Page 36
18.	ANS: A	PTS: 5	REF: Page 34
19.	ANS: A	PTS: 5	
20.	ANS: A	PTS: 5	REF: Page 44
21.	ANS: B	PTS: 5	REF: Page 45
22.	ANS: B	PTS: 5	REF: Page 46
23.	ANS: D	PTS: 5	
24.	ANS: C	PTS: 5	REF: Page 51
25.	ANS: A	PTS: 5	REF: Page 52
26.	ANS: D	PTS: 5	REF: Page 53
27.	ANS: D	PTS: 5	
28.	ANS: D	PTS: 5	REF: Page 59
29.	ANS: D	PTS: 5	REF: Page 60
30.	ANS: D	PTS: 5	REF: Page 61
31.	ANS: A	PTS: 5	REF: Page 62
32.	ANS: A	PTS: 5	
33.	ANS: D	PTS: 5	REF: Page 67
34.	ANS: A	PTS: 5	REF: Page 68
35.	ANS: C	PTS: 5	REF: Page 69
36.	ANS: D	PTS: 5	

NUMERIC RESPONSE

37. ANS: 10.8

PTS: 5

38. ANS: 243

PTS: 5