

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Decide whether the set of ordered pairs is a function.

- 1) $\{(1, -7), (2, -3), (4, 7), (9, -6), (10, 1)\}$

A) Function

B) Not a function

1) _____

Find the domain and the range of the function given.

- 2) $\{(5, 1), (7, 0), (8, 0), (11, 1)\}$

A) Domain: $\{0, 1\}$; range: $\{5, 7, 8, 11\}$

B) Domain: $\{5, 8, 11\}$; range: $\{0, 1\}$

C) Domain: $\{5, 7, 8, 11\}$; range: $\{0, 1\}$

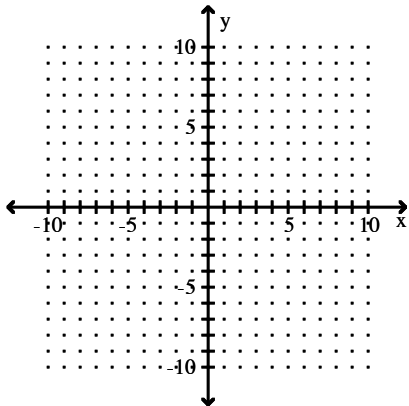
D) Domain: $\{5, 7, 8, 11\}$; range: $\{1\}$

2) _____

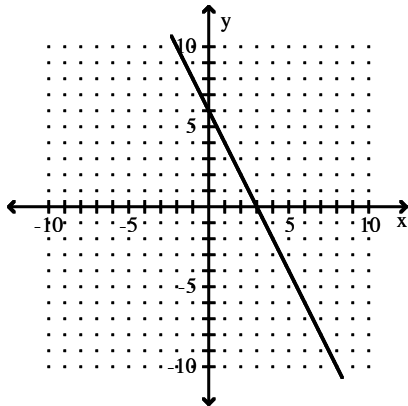
Graph the linear function.

- 3) $f(x) = 2x + 6$

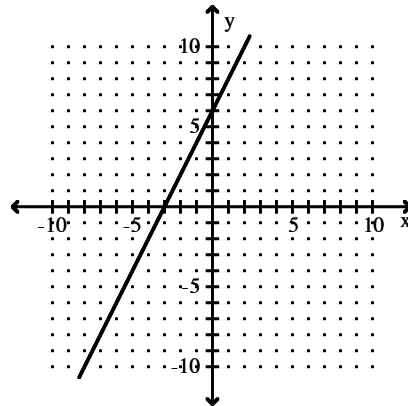
3) _____



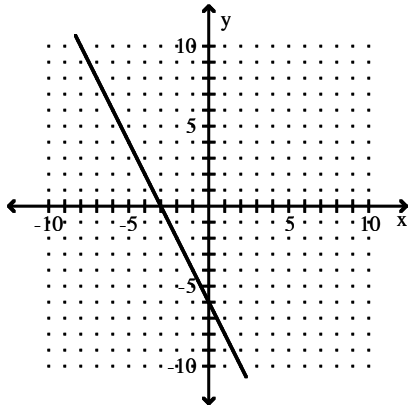
A)



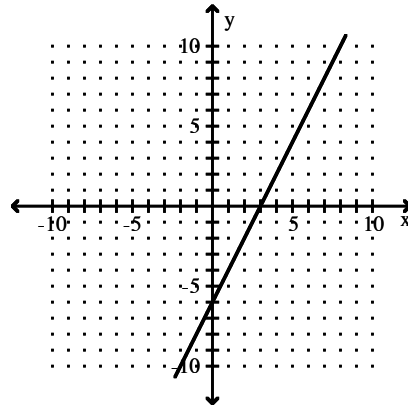
B)



C)

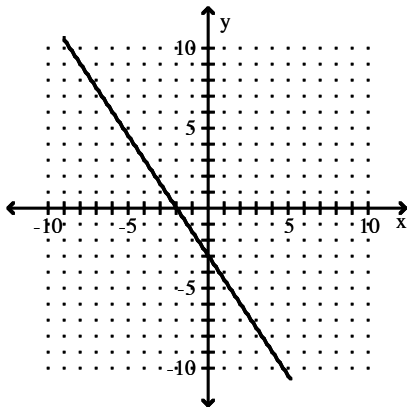


D)



Determine the linear function $f(x)$ that is graphed.

4)



4) _____

A) $f(x) = -\frac{3}{2}x - 3$

B) $f(x) = -2x - 3$

C) $f(x) = -\frac{2}{3}x - 2$

D) $f(x) = 2x - 3$

Solve the problem.

5) It costs \$31 per hour plus a flat fee of \$17 for a plumber to make a house call. Find a linear function $f(x) = mx + b$ whose input is the number of hours that the plumber works and whose output is the corresponding cost for the house call.

5) _____

A) $f(x) = 17x$

B) $f(x) = 31x + 17$

C) $f(x) = 17x + 31$

D) $f(x) = 31x$

Without graphing the function, state the shift(s) that are applied to the graph of $f(x) = x^2$ to graph the given function.

If the graph of $f(x) = x^2$ must be rotated about the x -axis, state this.

6) $f(x) = (x+6)^2 + 13$

6) _____

A) right 6 units, up 13 units

B) left 6 units, down 13 units

C) right 6 units, down 13 units

D) left 6 units, up 13 units

Find the vertex.

7) $f(x) = x^2 - 20x + 101$

7) _____

A) (1, 10)

B) (10, 1)

C) (0, 10)

D) (1, 0)

Find the x- and y-intercepts. If no x-intercepts exist, state so.

8) $f(x) = 2x^2 + 6x - 20$

A) $(4, 0), \left(-\frac{5}{2}, 0\right), (0, -20)$

C) $(-5, 0), (-2, 0), (0, 20)$

B) $(-5, 0), (2, 0), (0, -20)$

D) $(4, 0), \left(-\frac{5}{2}, 0\right), (0, 20)$

8) _____

State the domain and range of the given function.

9) $f(x) = (x+8)^2 - 2$

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

Range: $[-2, \infty)$

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

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

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

Range: $[2, \infty)$

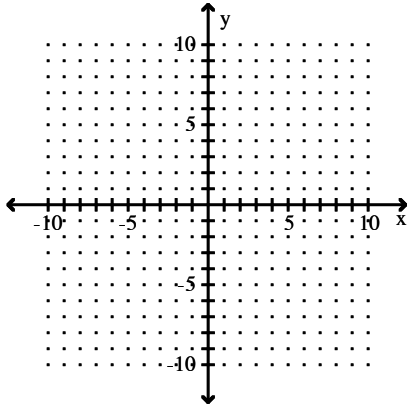
D) Domain: $[8, \infty)$

Range: $[-2, \infty)$

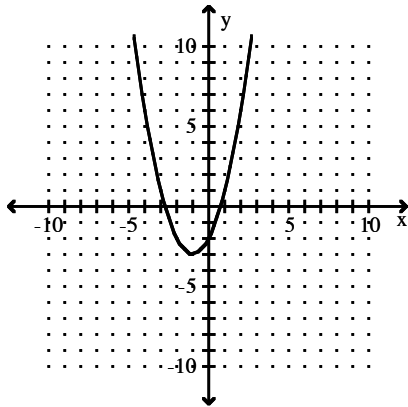
9) _____

Graph.

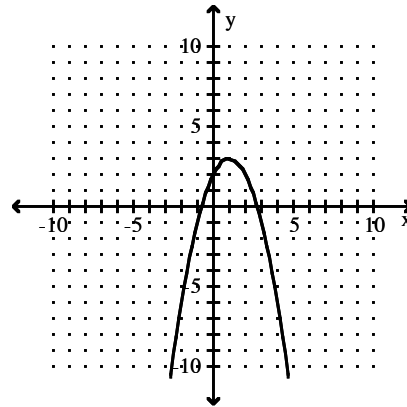
10) $f(x) = x^2 + 2x + 2$



A)

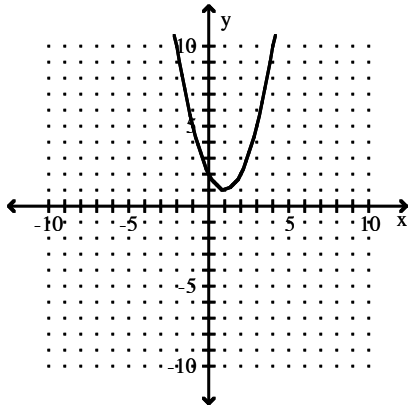


B)

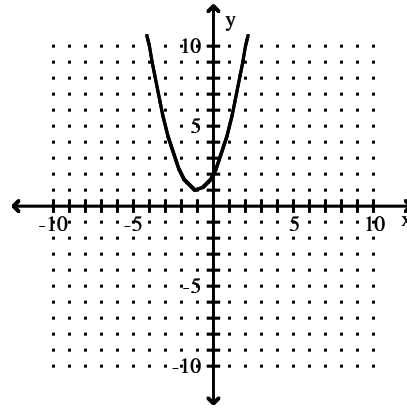


10) _____

C)



D)



Determine whether the given quadratic function has a maximum or minimum value. Then find that maximum or minimum value.

11) $f(x) = -x^2 + 16x - 65$

A) Minimum, 1

B) Maximum, -8

C) Maximum, -1

D) Minimum, 8

11) _____

Determine a quadratic function that results when applying the given shifts to the graph of $f(x) = x^2$.

12) Shift 25 units to the left and 90 units down.

A) $f(x) = (x - 25)^2 - 90$

B) $f(x) = (x + 25)^2 - 90$

C) $f(x) = (x - 90)^2 + 25$

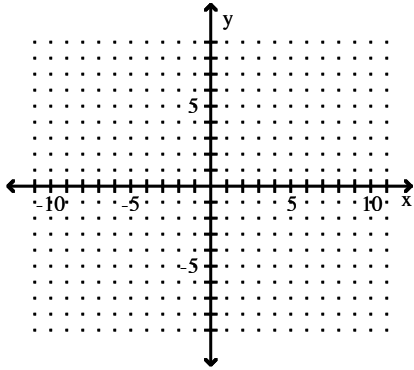
D) $f(x) = (x - 90)^2 - 25$

12) _____

Graph the given absolute value function and state its domain and range.

13) $f(x) = |x + 4| - 2$

13) _____

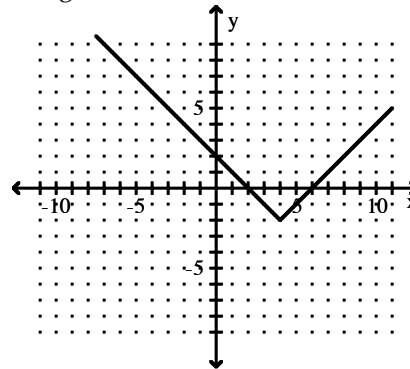
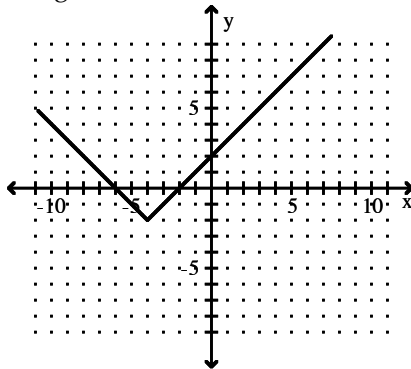


A) Domain: $(-\infty, \infty)$

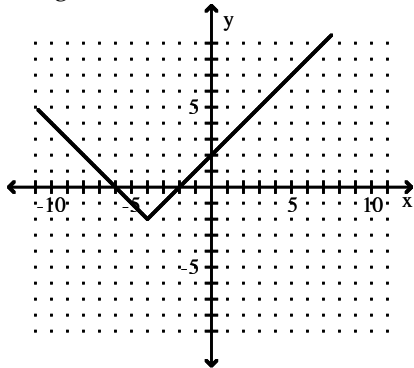
Range: $[-2, \infty)$

B) Domain: $[4, \infty)$

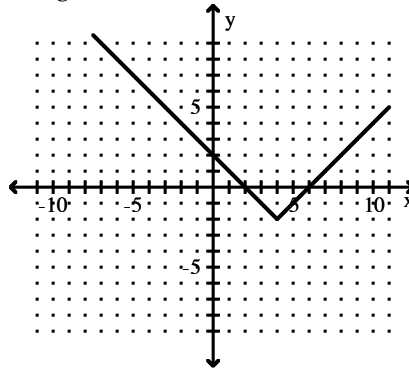
Range: $(-\infty, \infty)$



C) Domain: $[-4, \infty)$
 Range: $[-2, \infty)$



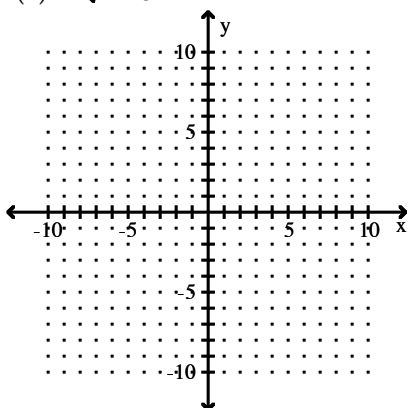
D) Domain: $(-\infty, \infty)$
 Range: $[-2, \infty)$



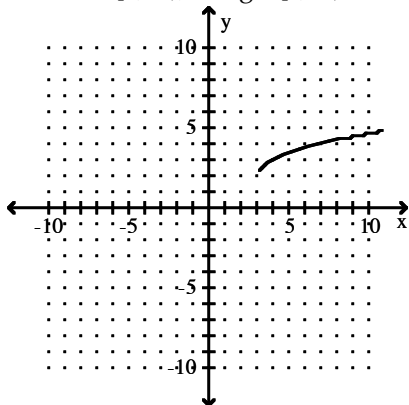
Graph the function, and state its domain and range.

14) $f(x) = \sqrt{x-3} + 2$

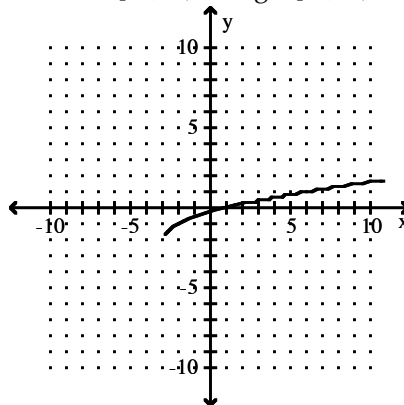
14) _____



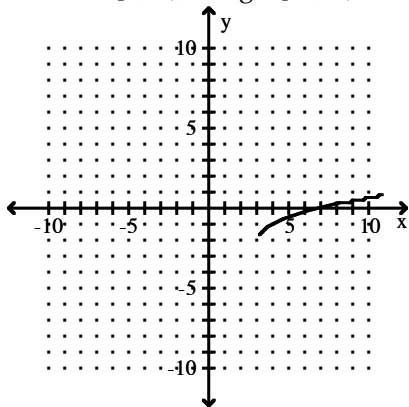
A) Domain: $[3, \infty)$; Range: $[2, \infty)$



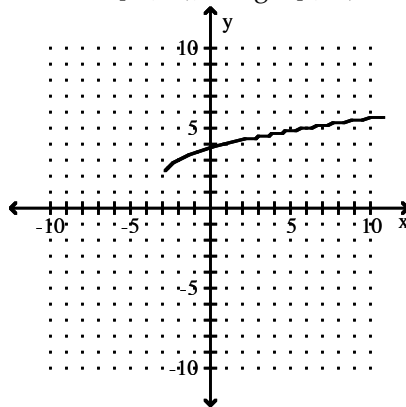
B) Domain: $[-3, \infty)$; Range: $[-2, \infty)$



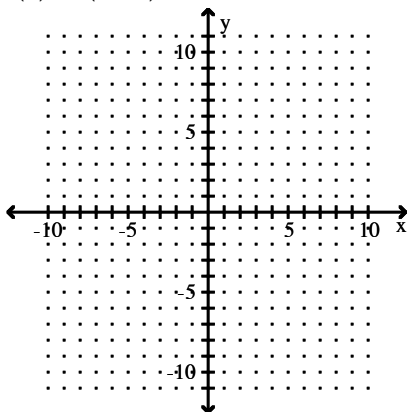
C) Domain: $[3, \infty)$; Range: $[-2, \infty)$



D) Domain: $[-3, \infty)$; Range: $[2, \infty)$

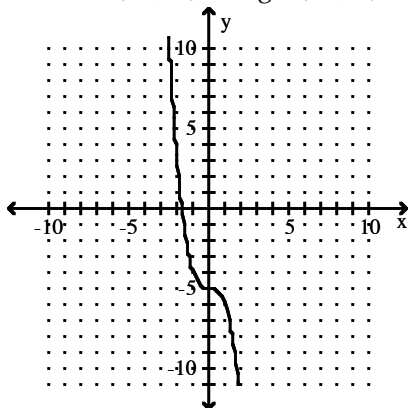


15) $f(x) = -(x - 5)^3$

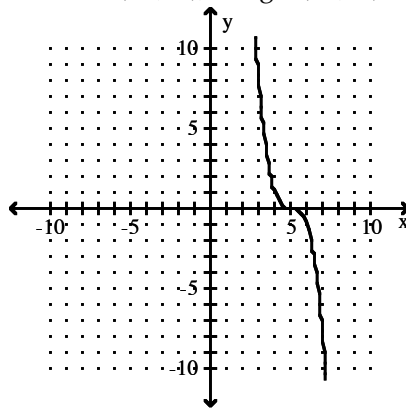


15) _____

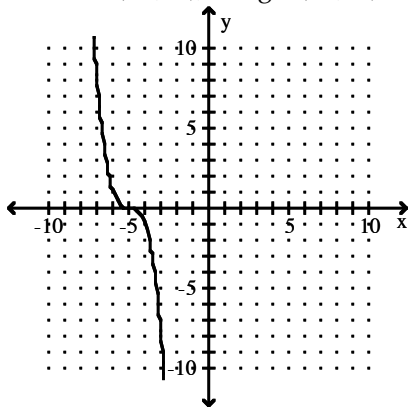
A) Domain: $(-\infty, \infty)$; Range: $(-\infty, \infty)$



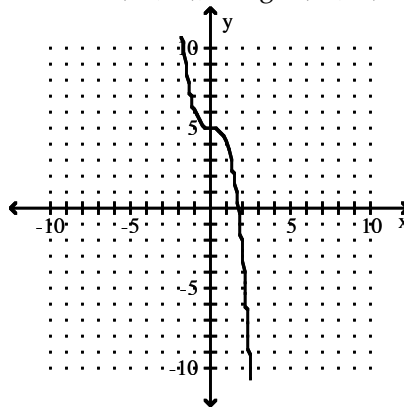
B) Domain: $(-\infty, \infty)$; Range: $(-\infty, \infty)$



C) Domain: $(-\infty, \infty)$; Range: $(-\infty, \infty)$

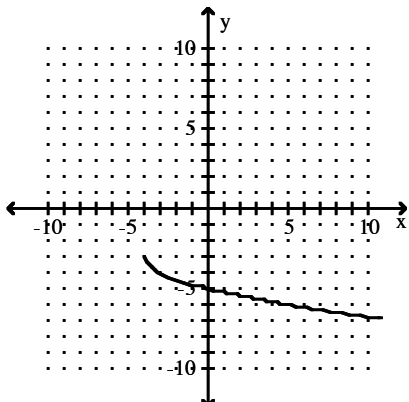


D) Domain: $(-\infty, \infty)$; Range: $(-\infty, \infty)$



Determine the function $f(x)$ that has been graphed. The function will be of the form $f(x) = a\sqrt{x-h} + k$ or $f(x) = a(x-h)^3 + k$. Assume $a = 1$ or $a = -1$.

16)

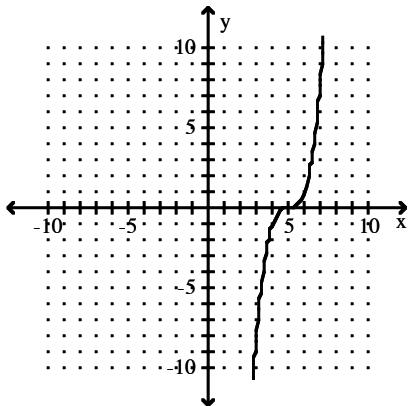


- A) $f(x) = -\sqrt{x-4} - 3$
 C) $f(x) = -\sqrt{x+4} + 3$

- B) $f(x) = -\sqrt{x-4} + 3$
 D) $f(x) = -\sqrt{x+4} - 3$

16) _____

17)



- A) $f(x) = (x-5)^3$ B) $f(x) = (x+5)^3$ C) $f(x) = x^3 + 5$ D) $f(x) = x^3 - 5$

17) _____

For the given functions $f(x)$ and $g(x)$, find $(f \cdot g)(x)$ or $\left(\frac{f}{g}\right)(x)$ as indicated.

18) $f(x) = x^2 + 12x + 36$, $g(x) = x + 6$ 18) _____

Find $\left(\frac{f}{g}\right)(x)$.

A) $x - 30$

B) $x^3 - 30$

C) $x + 6$

D) $x^2 + 6$

19) $f(x) = x + 8$, $g(x) = x + 7$ 19) _____

Find $(f \cdot g)(x)$.

A) $x^2 + 15x + 56$

B) $x^2 + 15x + 15$

C) $x^2 + 56$

D) $x^2 + 12x + 56$

For the given functions $f(x)$ and $g(x)$, find $(f + g)(x)$ or $(f - g)(x)$ as indicated.

20) $f(x) = -8x - 2$, $g(x) = x^2 - 6x - 4$ 20) _____

Find $(f + g)(x)$.

A) $x^2 - 14x + 14$

B) $x^2 - 3x - 6$

C) $x^2 - 14x - 6$

D) $x^2 - 3x - 8$

Given $f(x)$ and $g(x)$, find the indicated composition and state its domain.

21) $f(x) = 4x + 7$, $g(x) = 5x - 1$ 21) _____

Find $(f \circ g)(x)$.

A) $20x + 6$, all real numbers

B) $20x + 34$, all real numbers

C) $20x + 11$, all real numbers

D) $20x + 3$, all real numbers

22) $f(x) = 4x^2 + 2x + 3$, $g(x) = 2x - 4$ 22) _____

Find $(g \circ f)(x)$.

A) $8x^2 + 4x + 2$, all real numbers

B) $4x^2 + 4x + 2$, all real numbers

C) $4x^2 + 2x - 1$, all real numbers

D) $8x^2 + 4x + 10$, all real numbers

For the given function $f(x)$, find $f^{-1}(x)$.

23) $f(x) = \frac{1}{9}x + 2$ 23) _____

A) $f^{-1}(x) = 9x + 18$

B) $f^{-1}(x) = \frac{1}{9}x - 2$

C) $f^{-1}(x) = \frac{1}{2}x + 9$

D) $f^{-1}(x) = 9x - 18$

24) $f(x) = \frac{6}{x+5}$ 24) _____

A) $f^{-1}(x) = \frac{-5x+6}{x}$

B) $f^{-1}(x) = \frac{x}{5+6x}$

C) $f^{-1}(x) = \frac{5+6x}{x}$

D) Not one-to-one

For the given function $f(x)$, find $f^{-1}(x)$. State the domain of $f^{-1}(x)$.

25) $f(x) = \sqrt{x-2} + 7$

25) _____

A) $f^{-1}(x) = x^2 + 7, x \geq 0$

B) $f^{-1}(x) = (x+2)^2 - 7, x \geq -2$

C) $f^{-1}(x) = (x+7)^2 - 2, x \geq -7$

D) $f^{-1}(x) = (x-7)^2 + 2, x \geq 7$

26) $f(x) = (x-18)^2 + 3 \quad (x \geq 18)$

26) _____

A) $f^{-1}(x) = 3x^2 + 18, x \geq 0$

B) $f^{-1}(x) = \sqrt{x-3} + 18, x \geq 3$

C) $f^{-1}(x) = \sqrt{x+18} - 3, x \geq -18$

D) $f^{-1}(x) = \sqrt{x+3} - 18, x \geq -3$

If the function represented by the set of ordered pairs is one to one, find its inverse.

27) $f = \{(0, 0), (1, 1), (2, 2), (3, 3)\}$

27) _____

A) $f^{-1} = \{(0, 0), (1, -1), (2, -2), (3, -3)\}$

B) $f^{-1} = \{(0, 0), (-1, 1), (-2, 2), (-3, 3)\}$

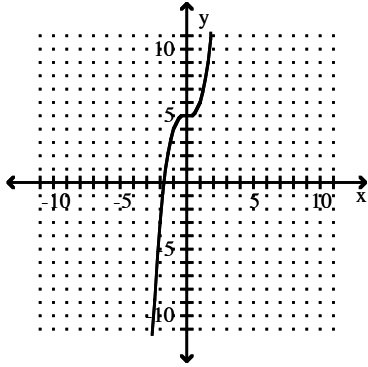
C) $f^{-1} = \{(0, 0), (-1, -1), (-2, -2), (-3, -3)\}$

D) $f^{-1} = \{(0, 0), (1, 1), (2, 2), (3, 3)\}$

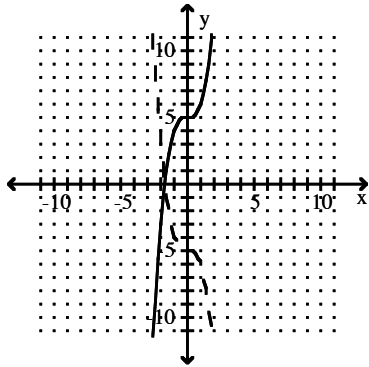
For the given graph of a one-to-one function $f(x)$, graph its inverse function $f^{-1}(x)$ using a dashed line.

28)

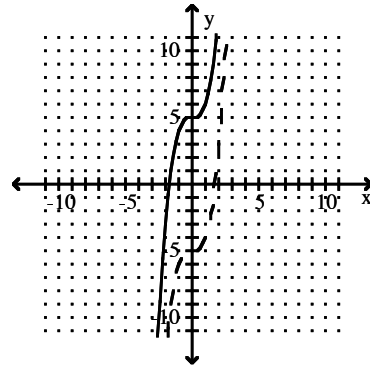
28) _____



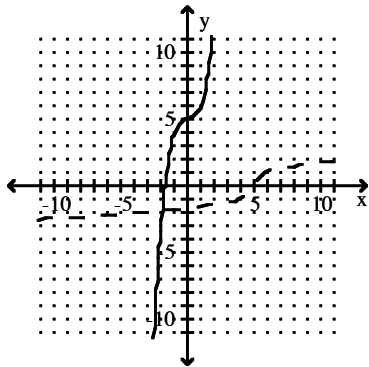
A)



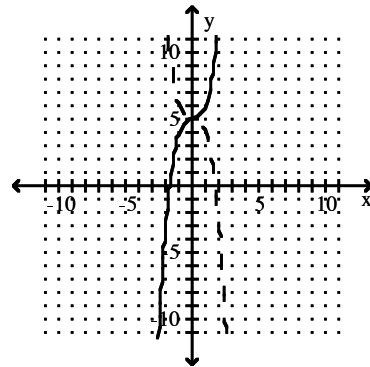
B)



C)



D)



Answer Key

Testname: CH-11-EXAM-103

- 1) A
- 2) C
- 3) B
- 4) A
- 5) B
- 6) D
- 7) B
- 8) B
- 9) A
- 10) D
- 11) C
- 12) B
- 13) A
- 14) A
- 15) B
- 16) D
- 17) A
- 18) C
- 19) A
- 20) C
- 21) D
- 22) A
- 23) D
- 24) A
- 25) D
- 26) B
- 27) D
- 28) C