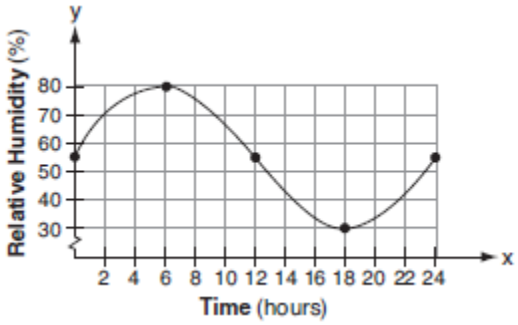
Practice for Functions Test **Name:**

Algebra 2

Multiple Choice.

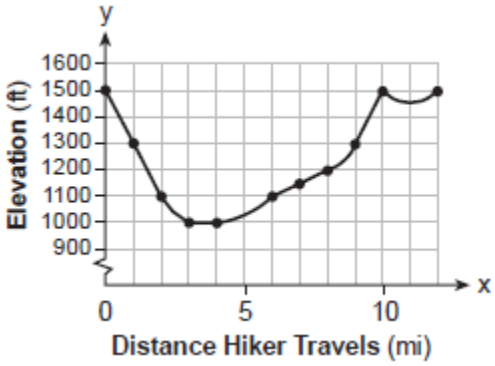
1. A meteorologist drew the accompanying graph to show the changes in relative humidity during a 24-hour period in New York City.



What is the range of this set of data?

1) $0 \le y \le 24$
2) $0 \le x \le 24$
3) $30 \le y \le 80$
4) $30 \le x \le 80$

2. The accompanying graph shows the elevation of a certain region in New York State as a hiker travels along a trail.

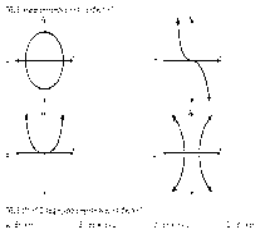


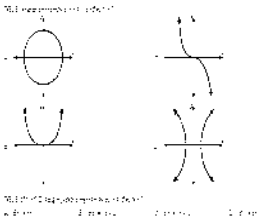
What is the domain of this function?

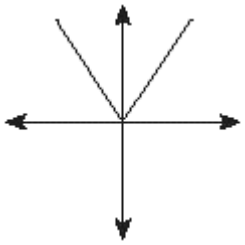
1) $0 \le x \le 12$
2) $0 \le y \le 12$
3) $1{,}000 \le x \le 1{,}500$
4) $1{,}000 \le y \le 1{,}500$

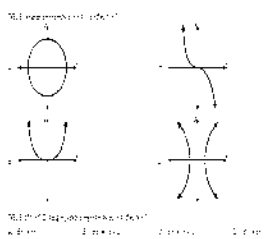
3. Given the relation $R = \{(-2,3),(a,4),(1,9),(0,7)\}$. Which replacement for *a* makes this relation a function?
   1) 1
   2) –2
   3) 0
   4) 4

4. Which diagram represents a function?

1) 

2) 

3) 

4) 

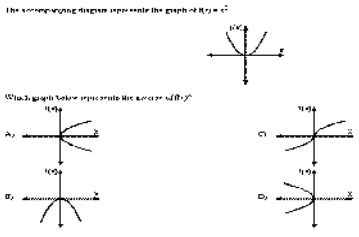
5. If point (*a*, *b*) lies on the graph $y = f(x)$, the graph $y = f^{-1}(x)$ must contain point

   1. (*b, a*)
   2. (*a,* 0)
   3. (0, *b*)
   4. (*-a, -b)*

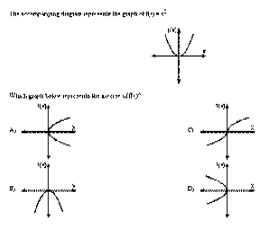
6. Given the relation A: $\{(3,2),(5,3),(6,2),(7,4)\}$

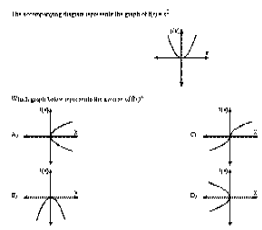
   Which statement is true?
   1) Both *A* and A^{-1} are functions.
   2) Neither *A* nor A^{-1} is a function.
   3) Only *A* is a function.
   4) Only A^{-1} is a function.

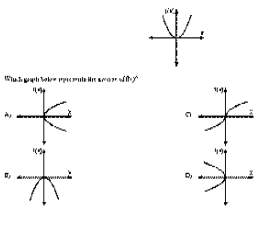
7. The accompanying diagram represents the graph of $f(x) = x^2$.

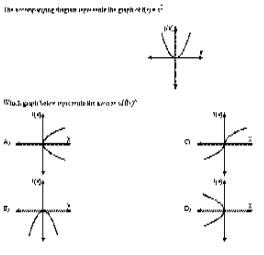
   

   Which graph represents the inverse of f(x)?

1) 

2) 

3) 

4) 

8.Let f be a function such that f(x) = 2x – 4 is defined on the domain $2 \le x \le 6$. The range of this function is

1) $0 \le y \le 8$
2) $0 \le y \le \infty$
3) $2 \le y \le 6$
4) $-\infty < y < \infty$

9. If $f(x) = x - 3$ and $g(x) = x^3$, then $f(g(3))$ is

1. 0
2. 6
3. 24
4. 30

10. Which is an equation of the inverse of $y = \frac{3}{2}x$?

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

Directions: Answer all questions completely. You must show work to get full credit.

7.Find the inverse of each function below, using function notation, and then state whether its inverse is also a function: (3 points each)

a) $K = \{(5,9),(-2,7),(2,7)\}$ $K^{-1} =$

Is the inverse a function? _____

b) $f(x) = 8x + 3$ $f^{-1}(x) =$

Is the inverse a function? _____

8 Given $f(x)=\frac{3}{7}x+15$ and $g(x)=\frac{7}{3}x-35$, are $f(x)$ and $g(x)$ inverses of each other? Justify your answer.

9..Evaluate the expression: 20 - (3 × 2^3 - 5)

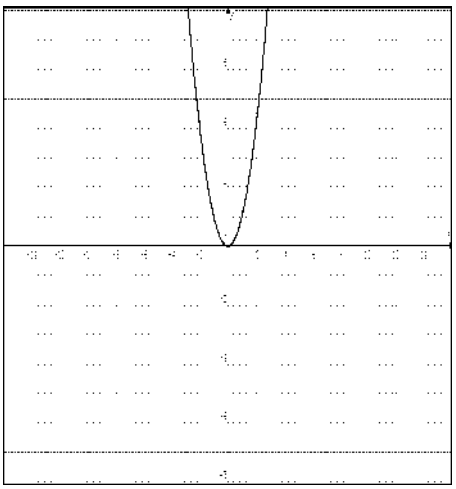
10.Given the following functions, answer the questions below. Put answers in simplest form.

$f(x)=x^2+1$ $\quad h(x)=\sqrt{5-x}$ $\quad j(x)=\frac{2}{3x+2}$

a) Evaluate $h(-31)$	**b)** Evaluate $j(2)$:
c) Evaluate $(f \circ j)(-1)$	**d)** $f(h(x))$ =
e) Domain of $h(x)$	f) Domain of $f(x)$

11) Given $j(x)=\frac{6}{2x+6}$, find its domain

12) Look at the graph of $f(x) = x^2$ sketched here.



a) For each function below, describe how the original parabola will be transformed.

b) Sketch functions #2, #5, and #6 on the graph.

$f(x) = x^2$ is the original function

1) $g(x) = 2x^2$ _____

2) $h(x) = x^2 - 2$ _____

3) $j(x) = (x-5)^2$ _____

4) $k(x) = \frac{1}{2}x^2 + 1$ _____

5) $m(x) = (x+2)^2 - 3$ _____

6) $n(x) = -x^2$ _____