Name: _____

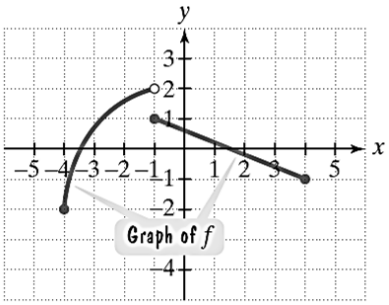
# 2.REV.1 – FUNCTIONS & THEIR CHARACTERISTICS

Past due on: _____ Period: _____

True or false? If false, explain your reasoning.

1. If $f(t) = 3t^2 - 4$, then $f(2) = 0$.
2. If $f(t) = t^2 + 64$, then $f(0) = 64$.
3. The domain of a function is the set of input values.
4. The domain of $f(x) = \dfrac{4}{x-3}$ consists of all real numbers $x$, $x \neq 0$.
5. If $g(x) = \sqrt{2-x}$, the domain of $g$ consists of a real numbers $x \geq 2$.
6. If $h(x) = \dfrac{2}{5}x + 6$ and its domain is $15 \leq x \leq 20$, then the range of $h$ is $12 \leq h(x) \leq 14$.

Use the graph of $f$ to identify the following characteristics.



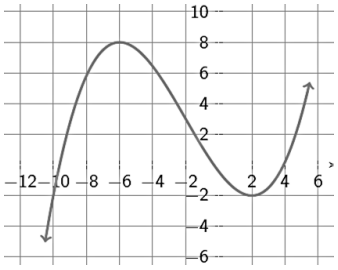

7. Domain:
8. Range:
9. Increasing interval:
10. Decreasing interval:
11. Evaluate $f(-1)$

Algebraically find the domain of the function.

12. $d(x) = \dfrac{x-3}{x+6}$
13. $m(x) = \dfrac{2}{x^2-9}$
14. $I(x) = \sqrt{6-2x}$
15. $n(x) = 3\sqrt{2x-10}$

Use the function's graph to identify the indicated characteristics.

16.



Relative maximum:

Relative minimum:

Increasing interval(s):

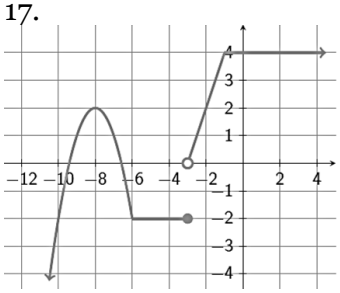
Decreasing interval(s):

Concave up interval:

Concave down interval:

Solve $f(x) = -2$ for $x$.

17.



Range:

Relative maximum:

Increasing interval(s):

Decreasing interval(s):

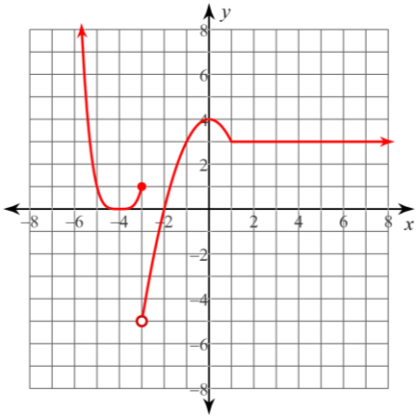
Constant interval(s):

Concave down interval:

Solve $f(x) = 2$ for $x$.

18. Use the piecewise function formula and/or its graph to determine the following:

$$w(x) = \begin{cases} (x+4)^4, & x \le -3 \\ 4 - x^2, & -3 < x \le 1 \\ 3, & x > 1 \end{cases}$$



Domain:

Range:

Increasing interval(s):

Decreasing interval(s):

Constant interval(s):

Concave up interval:

Concave down interval:

Relative maximum:

Relative minimum:

Evaluate:

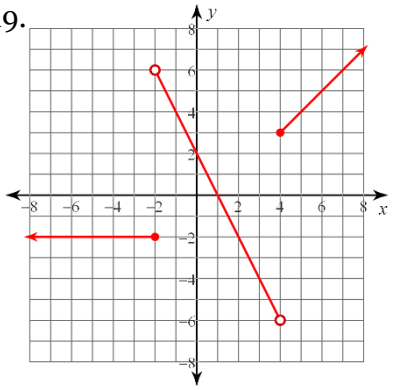
$w(-3) =$ $w(1) =$

$w(-1) =$ $w(-5) =$

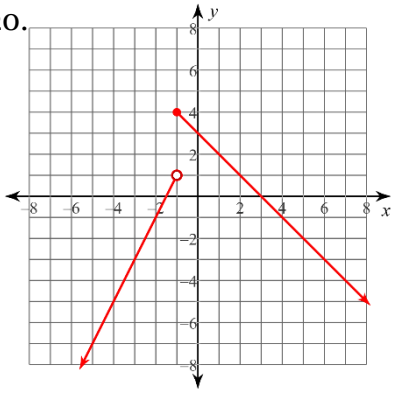
$w(-7) =$ $w(30) =$

Write a piecewise function formula and identify the domain and range.

19.



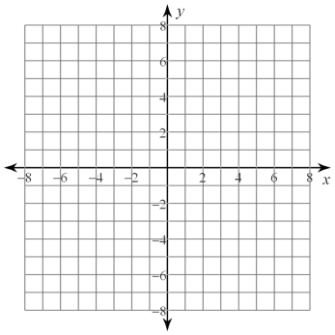
20.



Graph the piecewise function. Also identify its domain and range.

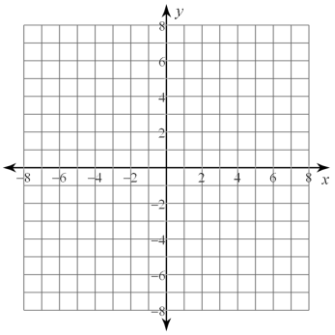
21.

$$f(x) = \begin{cases} x+3, & x < -4 \\ 6, & -4 \le x < 2 \\ 2x-4, & x \ge 2 \end{cases}$$



22.

$$g(x) = \begin{cases} x+1, & x < -1 \\ -x+4, & -1 \le x < 4 \\ -6, & x \ge 4 \end{cases}$$



23. A bakery has the following pricing for large orders of cupcakes. The first 100 cupcakes of any order cost $2 each. Each of the next 150 cupcakes only cost $1.75 each. Each cupcake ordered in excess of 250 costs $1.25 each. The total cost, $C$, is a function of the number of cupcakes ordered, $x$.

a. Write a piecewise function for the total cost.

b. The school orders 15 dozen cupcakes. What is the cost?

c. A couple orders 450 cupcakes for their wedding. What did they pay?