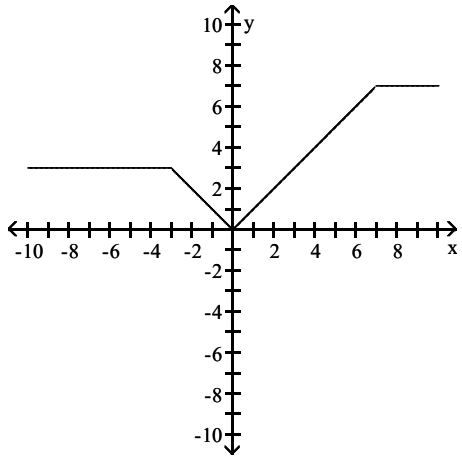
Chapter 1 Examples 2021

Name_____

Example 1: **Use the graph to identify important characteristics.**

1) 1) _____



Examples 2–4: Determine whether the given function is even, odd, or neither.

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

3) $f(x) = 4x^2 + x^4$ 3) _____

4) $f(x) = -2x^5 + x^3$ 4) _____

Example 5: Evaluate the piecewise function at the given value of the independent variable.

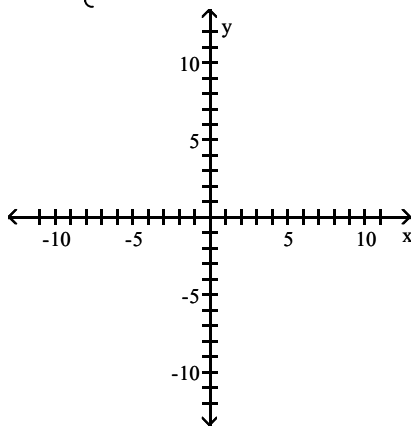
5) $f(x) = \begin{cases} 5x - 3 & \text{if } x < -4 \\ 3x - 5 & \text{if } x \geq -4 \end{cases}$; $f(-3)$ 5) _____

Example 6: Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$ for the given function.

6) $f(x) = x^2 + 9x - 7$ 6) _____

Example 7: Graph the function.

7) $f(x) = \begin{cases} x + 5 & \text{if } -8 \le x < 2 \\ -4 & \text{if } x = 2 \\ -x + 5 & \text{if } x > 2 \end{cases}$ 7) _____



Example 8: Use the given conditions to write an equation for the line in point–slope form.

8) Passing through (3, –6) with x–intercept = –2 8) _____

Examples 9–10: Given functions f and g, perform the indicated operations.

9) $f(x) = 4x^2 - 7x$, $g(x) = x^2 - 5x - 14$ 9) _____

Find $\frac{f}{g}$.

10) $f(x) = 7x - 9$, $g(x) = 2x - 4$ 10) _____

Find $f - g$.

Example 11: For the given functions f and g , find the indicated composition.

11) $f(x) = -4x + 8, \quad g(x) = 3x + 5$ 11) _____

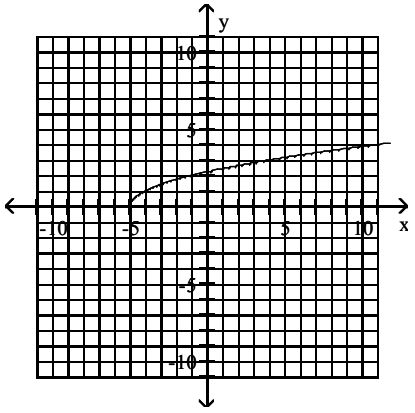
$(g \circ f)(x)$

Example 12: Find the inverse of the one–to–one function.

12) $f(x) = \dfrac{5}{7x - 8}$ 12) _____

Example 13: Use the graph of f to draw the graph of its inverse function.

13) 13) _____



Example 14: Determine which two functions are inverses of each other.

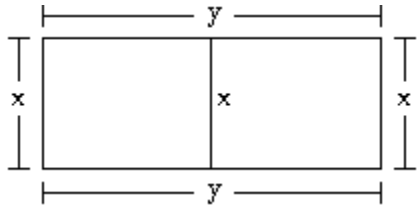
14) $f(x) = 3x \qquad g(x) = \dfrac{x}{3} \qquad h(x) = \dfrac{3}{x}$ 14) _____

Example 15–17: Solve the problem.

15) A car rental agency charges $150 per week plus $0.35 per mile to rent a car. How many miles were driven during the week if the weekly cost to rent the car was $332? 15) _____

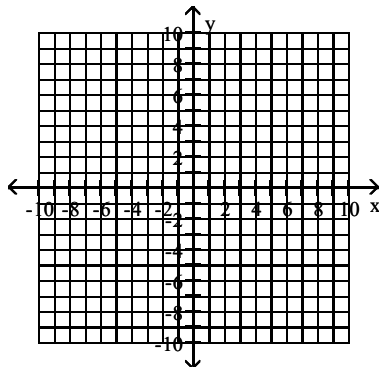
16) An open box is made from a square piece of sheet metal 19 inches on a side by cutting identical squares from the corners and turning up the sides. Express the volume of the box, V, as a function of the length of the side of the square cut from each corner, x. 16) _____

17) The area of a rectangular garden is 225 square feet. The garden is to be enclosed by a stone wall costing $24 per linear foot. The interior wall is to be constructed with brick costing $9 per linear foot. Express the cost C, to enclose the garden and add the interior wall as a funct x. 17) _____



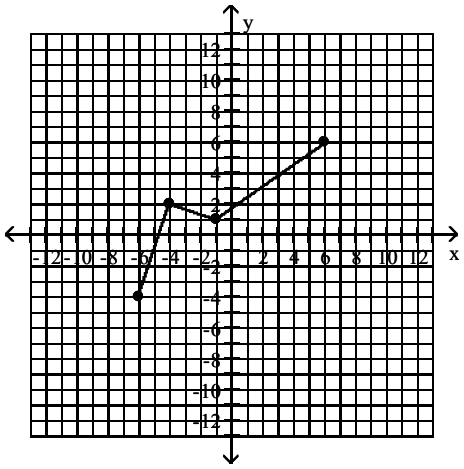
Example 18: Begin by graphing the standard absolute value function f(x) = |x|. Then use transformations of this graph to graph the given function.

18) g(x) = 2|−2x| 18) _____



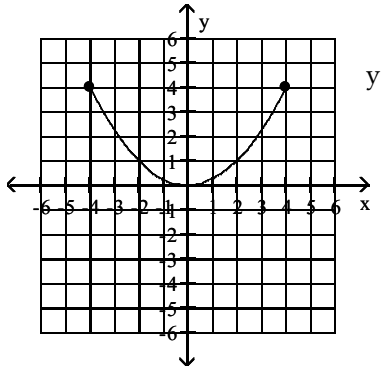
Example 19: Use the graph of y = f(x) to graph the given function g.

19) g(x) = –2f(x) 19) _____



Example 20: Use the graph of the function f, plotted with a solid line, to sketch the graph of the given function g.

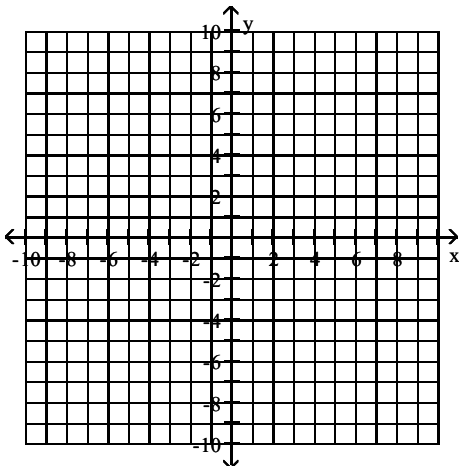
20) g(x) = – f(x) – 1 20) _____



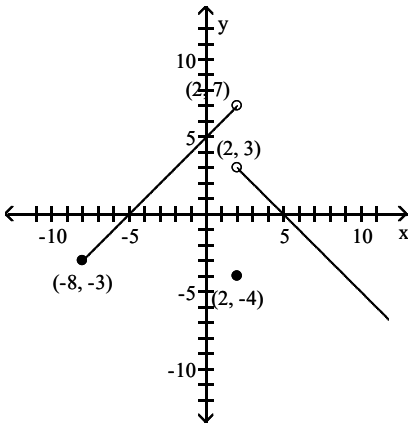
y = f(x)

Example 21: Begin by graphing the cube root function f(x) = $\sqrt[3]{x}$ Then use transformations of this graph to graph the given function.

21) g(x) = – $\sqrt[3]{x+4}$ 21) _____



1) domain: $(-\infty, \infty)$
range: $[0, 7]$
2) Neither
3) Even
4) Odd
5) -14
6) $2x + h + 9$
7)



8) $y + 5 = -\frac{5}{2}(x - 1)$ or $y = -\frac{5}{2}(x + 1)$

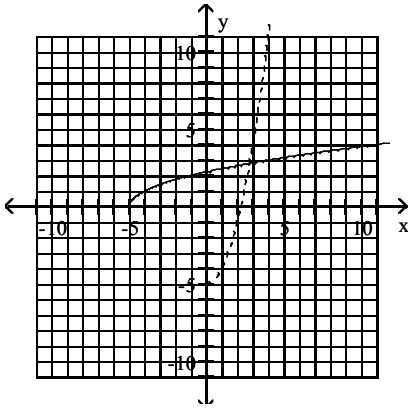
9) $\frac{4x^2 - 7x}{x^2 - 5x - 14}$

10) $5x - 5$

11) $-12x + 29$

12) $f^{-1}(x) = \frac{5}{7x} + \frac{8}{7}$

13)



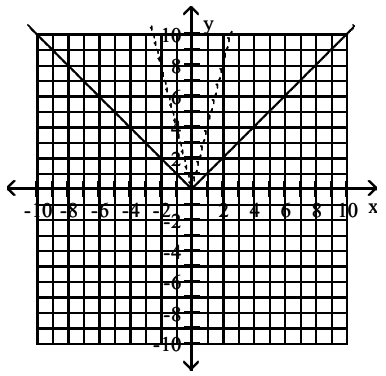
14) f(x) and g(x)

15) 520 mi

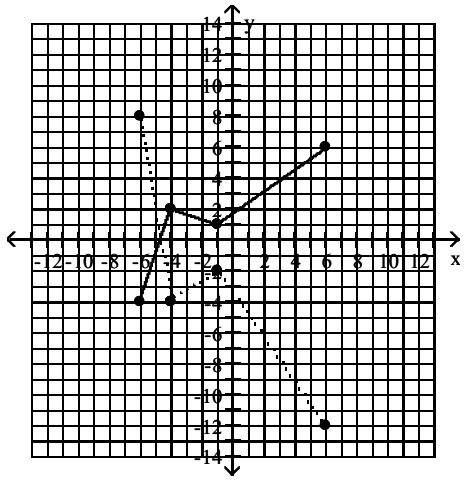
16) $V(x) = x(19 - 2x)^2$

17) $C(x) = 9x + 24\left(2x + \frac{450}{x}\right)$

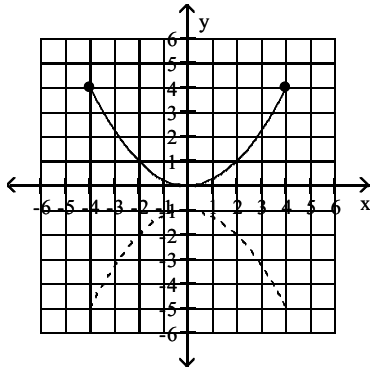
18)



19)



20)



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