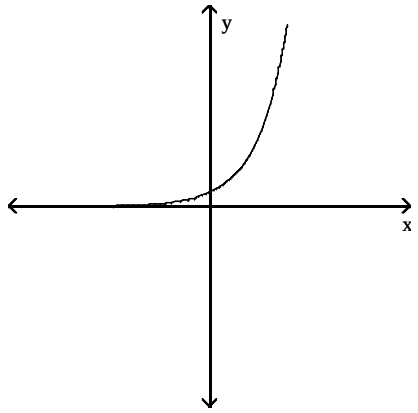
Math 131 Group Review Assignment (1.2, 1.4, 2.1–2.6)

Print Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. Write your answer in the blank provided and record your answer on the scantron answer sheet. (You will not be getting the scantron answer sheet back.) If a question appears to not have instructions, the instructions for the previous question apply. A specific method of solving an equation may be given but you can use any method you choose. Good luck and have fun!

Determine whether the graph is the graph of a function.

1) 1) _____



A) Yes

B) No

SHOW YOUR WORK. Complete the problem, showing work for possible partial credit. Circle your final answer.

Write a slope–intercept equation for a line with the given characteristics.

2) Passes through (–5, –9) and (0, –2)

Solve the problem using your calculator.

3) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. Use a graphing calculator to model the data with a linear function that predicts a student's score as a function of the number of hours he or she studied.

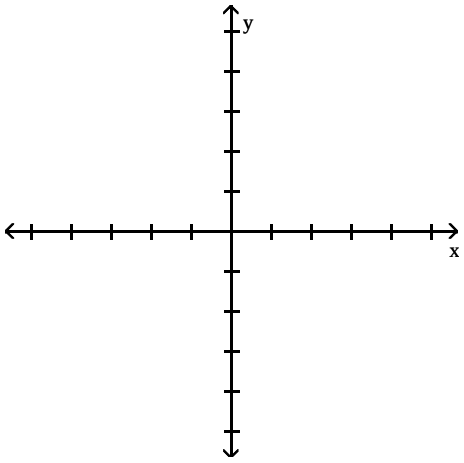
Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

Solve.

4) A rectangle that is x feet wide is inscribed in a circle of radius 32 feet. Express the area of the rectangle as a function of x. Graph the function and from the graph determine the value of x, to the nearest tenth of a foot, which will maximize the area of the rectangle.

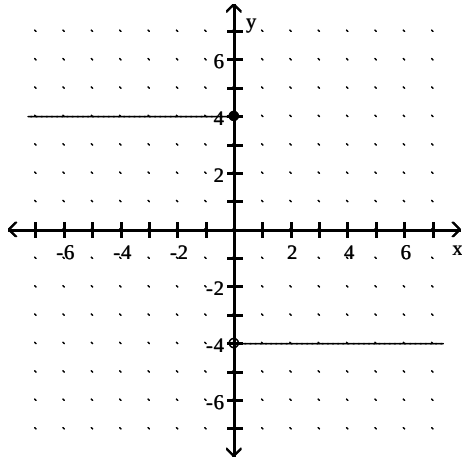
Graph the function. Use the graph to find any relative maxima or minima.

5) $f(x) = x^2 - 4$



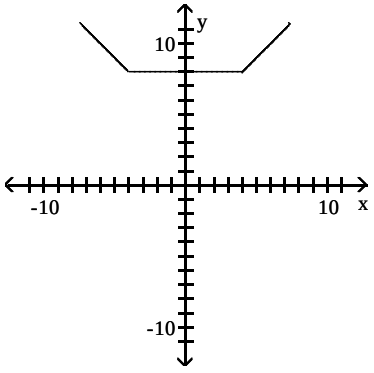
Write an equation for the piecewise function.

6)



Determine the intervals on which the function is increasing, decreasing, and constant.

7)



Solve.

8) At Allied Electronics, production has begun on the X–15 Computer Chip. The total revenue function is given by $R(x) = 47x - 0.3x^2$ and the total profit function is given by $P(x) = -0.3x^2 + 37x - 10$, where x represents the number of boxes of computer chips produced. The total cost function, C(x), is such that $C(x) = R(x) - P(x)$. Find C(x).

For the pair of functions, find the indicated sum, difference, product, or quotient.

9) $f(x) = 2x + 5$, $g(x) = 6x + 8$
Find (fg)(x).

10) $f(x) = x + 5$, $g(x) = x - 4$
Find $(f + g)(-4)$.

11) $f(x) = \sqrt{2x + 4}$, $g(x) = \sqrt{25x - 16}$
Find (fg)(x).

For the pair of functions, find the indicated domain.

12) $f(x) = \dfrac{10}{x + 3}$, $g(x) = x + 8$
Find the domain of $g \circ f$.

Solve the problem.

13) A stone is thrown into a pond. A circular ripple is spreading over the pond in such a way that the radius is increasing at the rate of 2.6 feet per second. Find a function, r(t), for the radius in terms of t. Find a function, A(r), for the area of the ripple in terms of r. Find $(A \circ r)(t)$.

Find the requested function value.

14) $f(x) = \frac{x - 7}{6}$, $g(x) = 5x + 4$

Find $(g \circ f)(-17)$.

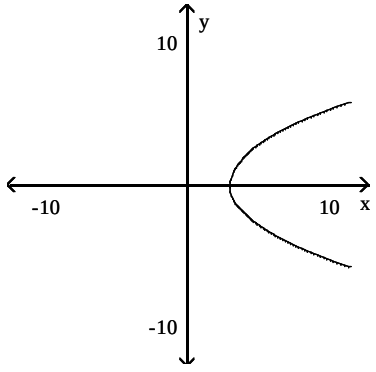
For the pair of functions, find the indicated composition.

15) $f(x) = -3x + 6$, $g(x) = 5x + 7$

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

Determine if the graph is symmetric with respect to x–axis, y–axis, and/or the origin.

16)



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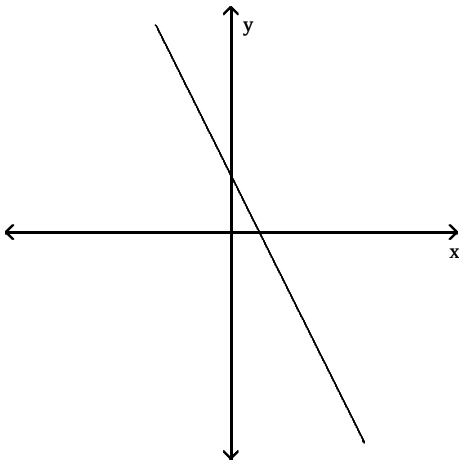
Determine whether the given function is even, odd, or neither even nor odd.

17) 17) _____



A) Neither

B) Odd

C) Even

Determine algebraically whether the graph is symmetric with respect to the x–axis, the y–axis, and the origin.

18) $y = 5x^2 - 5$ 18) _____

A) x–axis only

B) Origin only

C) x–axis, y–axis, origin

D) y–axis only

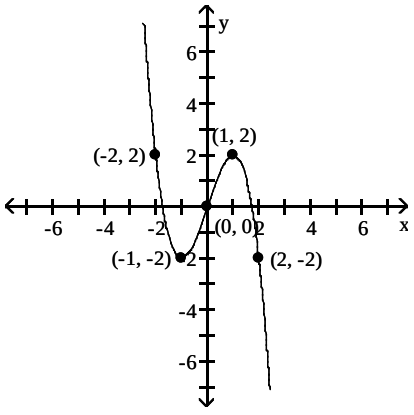
SHOW YOUR WORK. Complete the problem, showing work for possible partial credit. Circle your final answer.

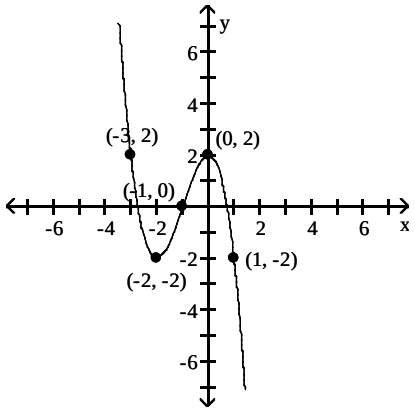
Given the function f, match the function g with a transformation of f.

19) $f(x) = x^2 + 2$, $g(x) = (x - 4)^2 + 2$

Given the graph of the function $f(x) = -x^3 + 3x$; find a formula for g(x) .

20) $f(x) = -x^3 + 3x$ $g(x) =$





The given point is on the graph of y = f(x). Find a point on the graph of y = g(x).

21) $g(x) = f\left(-\frac{1}{4}x\right)$; (3, –4)

Answer the question.

22) How can the graph of $f(x) = 0.2|x - 8| + 3.7$ be obtained from the graph of $y = |x|$?

Write a slope–intercept equation for a line with the given characteristics.

23) Passes through (5, 7) and (–4, –6)

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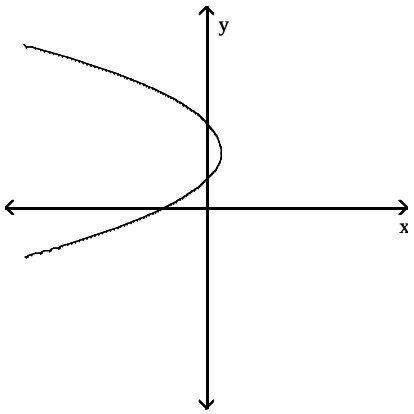
Determine whether the graph is the graph of a function.

24) 24) _____



A) Yes

B) No

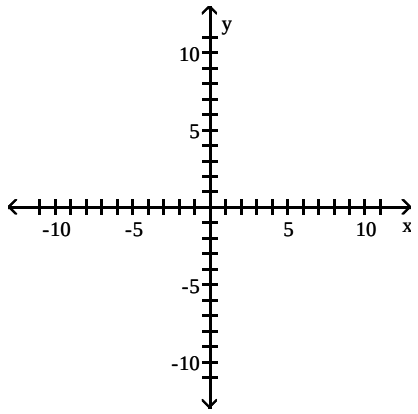
SHOW YOUR WORK. Complete the problem, showing work for possible partial credit. Circle your final answer.

Find the domain of the function.

25) $f(x) = \sqrt[3]{18 - x}$

Graph the function.

26) $f(x) = \sqrt{x} + 4$



Solve the problem.

27) The volume of wood in a tree varies jointly as the height of the tree and the square of the distance around the tree trunk. If the volume of wood is 15.84 cubic feet when the height is 22 feet and the distance around the trunk is 3 feet, what is the volume of wood obtained from a tree that is 23 feet tall having a measurement of 6 feet around the trunk?

Find an equation of variation for the given situation.

28) y varies inversely as the square of x, and $y = 7$ when $x = 4$

Solve the problem.

29) The distance it takes to stop a car varies directly as as the square of the speed of the car. If it takes 112 feet for a car traveling at 40 miles per hour to stop, what distance is required for a speed of 45 miles per hour?

1) A
Objective: (1.2) Determine if Graph Represents a Function

2) $y = \frac{7}{5}x - 2$
Objective: (1.4) Find Slope–Intercept Equation Given Two Points

3) $y = 67.3 + 1.07x$
Objective: (1.4) Tech: Solve Apps: Linear Regression

4) 45.3 feet
Objective: (2.1) Solve Apps: Optimize Quantity

5) Relative minimum of −4 at $x = 0$
Objective: (2.1) Graph Function to Find Relative Extrema

6) $f(x) = \begin{cases} 4, & \text{for } x \le 0, \\ -4, & \text{for } x > 0 \end{cases}$
Objective: (2.1) Find Piecewise Function from Graph

7) Increasing on $(4, \infty)$; Decreasing on $(-\infty, -4)$; Constant on $(-4, 4)$
Objective: (2.1) Determine Where Function is Increasing/Decreasing/Constant

8) $C(x) = 10x + 10$
Objective: (2.2) Solve Apps: Total Cost, Revenue, and Profit

9) $12x^2 + 46x + 40$
Objective: (2.2) Find Sum/Difference/Product/Quotient of Functions

10) −7
Objective: (2.2) Evaluate Sum/Difference/Product/Quotient of Functions

11) $(\sqrt{2x + 4})(\sqrt{25x - 16})$
Objective: (2.2) Find Sum/Difference/Product/Quotient of Functions

12) $(-\infty, -3) \cup (-3, \infty)$
Objective: (2.3) Find Domain of Composition of Functions

13) $(A \circ r)(t) = 6.76\pi t^2$
Objective: (2.3) Solve Apps: Composition of Functions

14) −16
Objective: (2.3) Evaluate Composition Function

15) $-15x + 37$
Objective: (2.3) Find Composition of Functions

16) x–axis
Objective: (2.4) Determine Symmetry from Graph

17) A
Objective: (2.4) Determine Whether Function is Even/Odd from Graph

18) D
Objective: (2.4) Determine Symmetry Algebraically

19) $f(x - 4)$
Objective: (2.5) Match Function to Transformation

20) $g(x) = -(x + 1)^3 + 3(x + 1)$
Objective: (2.5) Find Equation of Transformed Function from Graph

21) (−12, −4)
Objective: (2.5) Find Corresponding Point on Transformed Graph

22) Shift it horizontally 8 units to the right. Shrink it vertically by a factor of 0.2. Shift it vertically 3.7 units upward.
Objective: (2.5) Describe Transformation I

23) $y = \frac{13}{9}x - \frac{2}{9}$

Objective: (1.4) Find Slope–Intercept Equation Given Two Points

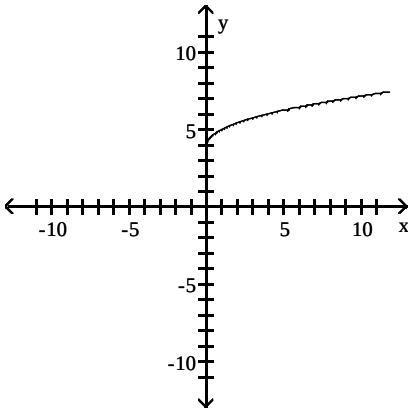
24) B

Objective: (1.2) Determine if Graph Represents a Function

25) all real numbers, or $(-\infty, \infty)$

Objective: (1.2) Determine Domain of Function

26)



Objective: (1.2) Graph Function

27) 66.24 ft^3

Objective: (2.6) Solve Apps: Combined Variation II

28) $y = \frac{112}{x^2}$

Objective: (2.6) Find Equation: Combined Variation I

29) 141.75 ft

Objective: (2.6) Solve Apps: Combined Variation I