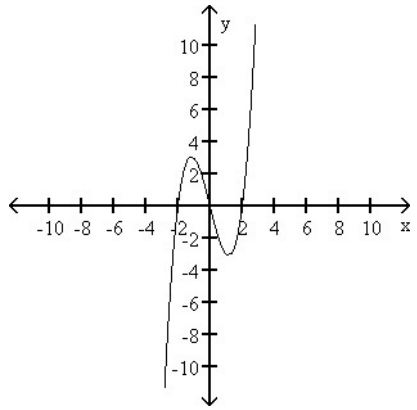
Exam
Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question. Indicate whether the graph is symmetric with respect to the x–axis, the y–axis, or the origin.

1) 

1) _____

Use a graphing utility to graph the following function. Use the graph to conjecture whether the function is even, odd, or neither. Finally, verify or disprove your conjecture algebraically.

2) $y = \dfrac{x}{x^2+3}$

2) _____

Find the general equation for the line with the given properties.

3) Containing the points (1, –7) and (–7, 8)

3) _____

Find the slope–intercept equation for the line with the given properties.

4) Perpendicular to the line $x = -\dfrac{1}{4}$; containing the point (5, –4)

4) _____

Use a graphing utility to find the equation of the line of best fit.

5)

x	1	3	5	7	9
y	143	116	100	98	90

5) _____

Solve the problem.

6) A marina owner wishes to estimate a linear function that relates boat length in feet and its draft (depth of boat below water line) in feet. He collects the following data. Let boat length represent the independent variable and draft represent the dependent variable. Use a graphing utility to draw a scatter diagram and to find the line of best fit. What is the draft for a boat 60 ft in length (to the nearest tenth)?

6)

Boat Length (ft)	Draft (ft)
25	2.5
25	2
30	3
30	3.5
45	6
45	7
50	7
50	8

_____ _____

Use the graph of the function f to find:

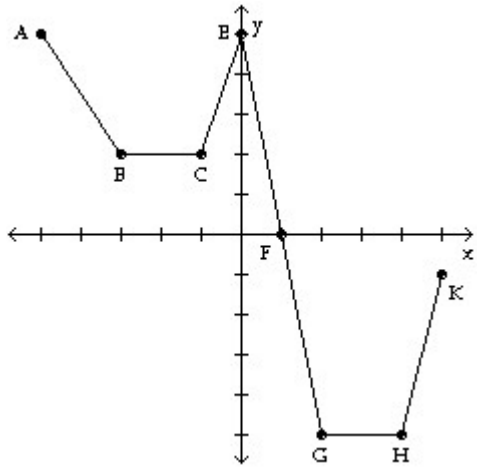
i) The intercepts, if any

ii) Its domain and range

iii) The intervals on which it is increasing, decreasing, or constant

iv) Whether it is even, odd, or neither

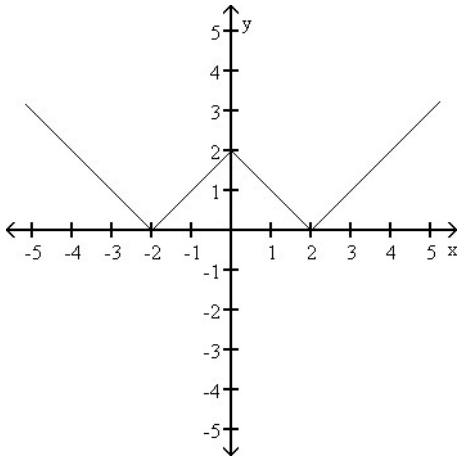
7) 7) _____



Label	Coordinates
A	(–5,5)
B	(–3,2)
C	(–1,2)
E	(0,5)
F	(1,0)
G	(2,–5)
H	(4,–5)
K	(5,–1)

The graph of a function f is given. Use the graph to find (a) the numbers, if any, at which f has a local maximum. What are these local maxima?; and (b) the numbers, if any, at which f has a local minimum. What are these local minima?

8) 8) _____



Find the average rate of change for the function over the given interval.

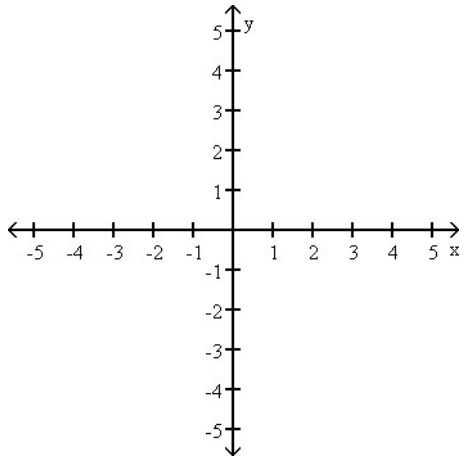
9) $f(x) = x^2 + 5x$ from 4 to 6 9) _____

For the given function, find the domain of f; the x–intercepts, if any, of the graph of f; and the y–intercept, if there is one, of the graph of f.

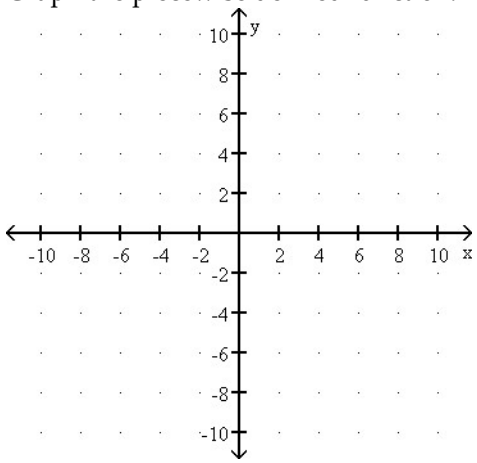
10) $f(x) = \dfrac{x^2+1}{x-7}$ 10) _____

Graph the function.

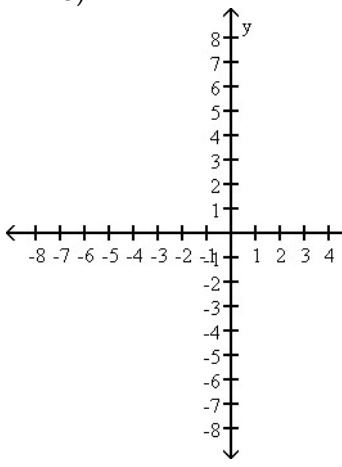
11) $f(x) = \frac{1}{x}$ 11) _____



12) Graph the piecewise defined function: $f(x) = \begin{cases} -x + 3 \text{ if } x < 2 \\ 2x - 3 \text{ if } x \geq 2 \end{cases}$ 12) _____

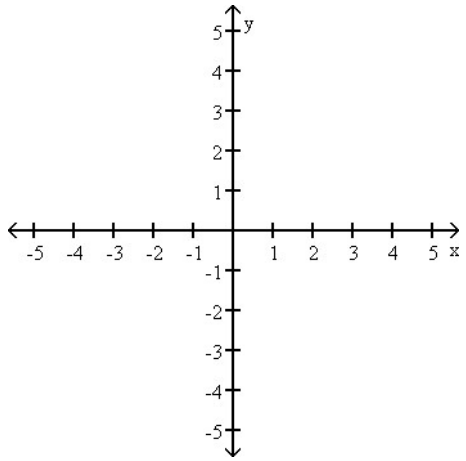


13) Graph the function whose graph is that of $y = x^3 - x^2 - 6x$ but is reflected about the y-axis. 13)



_____ _____

14) Graph the function whose graph is that of $y = x^3$ but is horizontally stretched by a factor of 5. 14) _____



Find the indicated composite for the pair of functions.

15) $(g \circ f)(x)$: $f(x) = 4x^2 + 6x + 4$, $g(x) = 6x - 6$ 15) _____

For the given functions f and g, find the requested composite function value.

16) $f(x) = \sqrt{x+3}$; $g(x) = 2x$; Find $(f \circ g)(4)$. 16) _____

1) symmetric with respect to origin

2) origin

3) $15x + 8y = -41$

4) $y = -4$

5) $y = -6.2x + 140.4$

6) 9.7

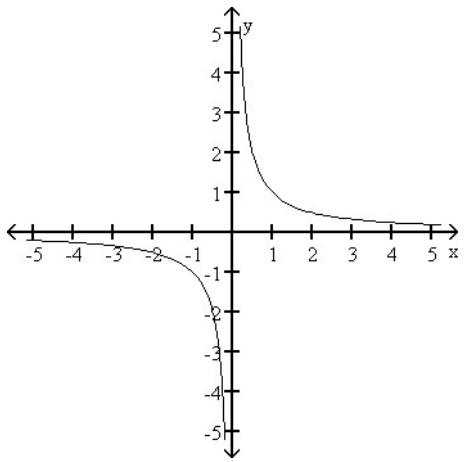
7) i) (0, 5), (1,0)
ii) Domain: [−5, 5], Range: [−5, 5]
iii) Increasing on [−1,0] and [4, 5]
Decreasing on [−5, −3] and [0, 2]
Constant on [−3, −1] and [2, 4]
iv) Neither

8) (a) f has a maximum at x = 0; the maximum is 2
(b) f has a minimum at x = −2 and 2; the minimum is 0

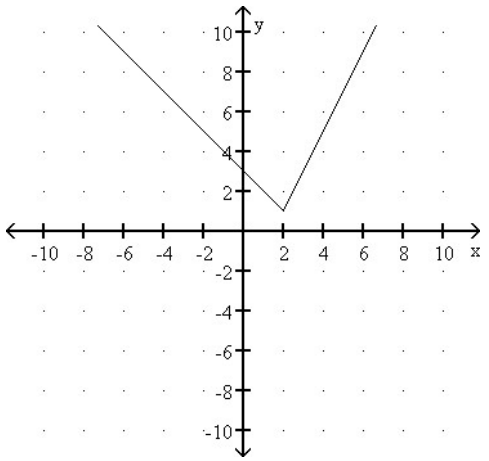
9) 15

10) $\{x \mid x \neq 7\}$
no x−intercepts
$(0, -\frac{1}{7})$

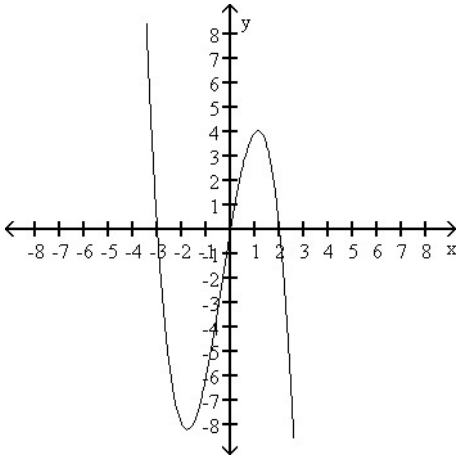
11)



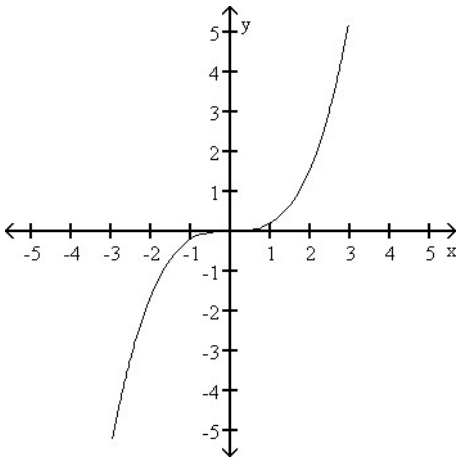
12)



13)



14)



15) $24x^2 + 36x + 18$

16) $\sqrt{11}$