

FINAL EXAM REVIEW

COLLEGE ALGEBRA

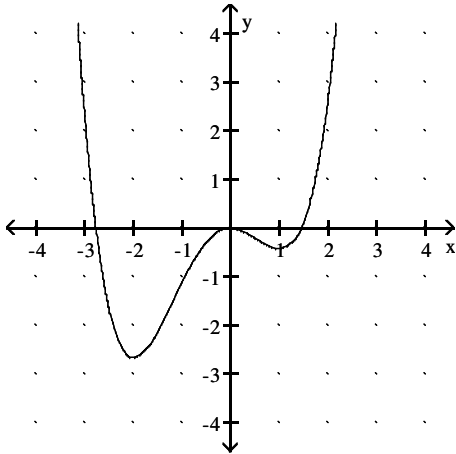
Complete the following for the given $f(x)$.

- (i) Find $f(x + h)$.
 (ii) Find the difference quotient of f and simplify.

- 1) a) $f(x) = x^2 - 5x$
 b) $f(x) = 5x - 11$
 c) $f(x) = 4x^2 + 10x - 9$

Use the graph of f to determine the intervals where f is increasing and where f is decreasing.

2)



State the domain and range of the relation and determine whether the relation is a function.

- 3) a) $S = \{(-15, 3), (-14, 5), (-30, 0), (-16, 3), (15, 0)\}$

b)

x	-3	-2	-1	0	-1	-2	-3
y	0.9	-0.9	1.8	-1.8	1.2	-1.2	2.4

Solve the problem.

- 4) The profit (in millions of dollars) for Allied Manufacturing can be approximated by $f(x) = -0.278x + 910.2$, where x is the year $1989 \leq x \leq 2009$. Approximate the average rate of change over a 3-year period. Round your answer to three decimal places when appropriate.

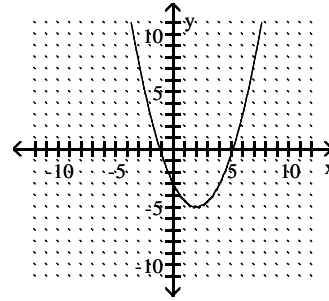
Write a formula for a linear function f that models the data exactly.

5)

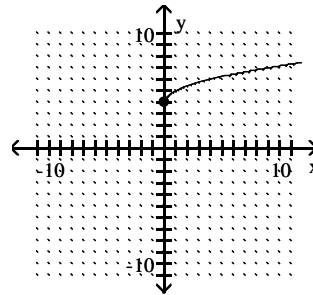
x	-4	-2	0	2	4
f(x)	17	11	5	-1	-7

State the domain and range of the relation and determine whether the relation is a function.

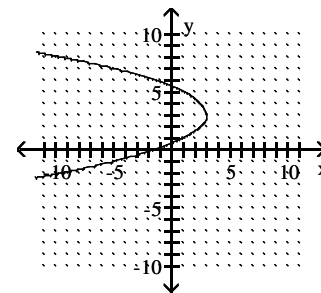
6) a)



b)



c)



Graph the linear function.

7) $f(x) = \frac{1}{5}x - 1$

Graph f . Use the graph to determine whether f is continuous.

8) a)

$$f(x) = \begin{cases} -2x - 4 & \text{if } -2 \leq x \leq 0 \\ -1 & \text{if } 0 < x < 3 \\ x - 7 & \text{if } 3 \leq x \leq 4 \end{cases}$$

b)

$$f(x) = \begin{cases} |x| - 2, & \text{if } x < 0 \\ -2, & \text{if } x \geq 0 \end{cases}$$

Write the slope-intercept form of the equation for the line passing through the given pair of points.

- 9) (6, -3) and (-4, 8)

Determine the equation of the line described. Put the answer in the slope-intercept form, if possible.

- 10) a) Through $(-2, 2)$, parallel to $4x - 7y = 6$
 b) Through $(-5, 9)$, perpendicular to $-5x - 8y = -47$

Specify the domain of the function.

- 11) a) $f(x) = 5x - 3$ b) $f(x) = \sqrt{9 - x}$
 c) $f(x) = 4x^2 + 9x - 7$ d) $f(x) = \frac{(x + 4)(x - 4)}{x^2 - 16}$
 e) $f(x) = \frac{(x + 4)(x - 4)}{x^2 + 16}$ f) $f(x) = \frac{\sqrt{x + 6}}{(x + 7)(x - 2)}$

Solve the inequality. Express the solution set in interval notation.

- 12) a) $13a - 6 \leq 12a + 5$
 b) $15z + 40 > 5(2z + 6)$
 c) $-3(5a - 3) \leq -18a + 27$
 d) $\frac{3x - 10}{2} < \frac{16}{3}$
 e) $-3 < 10x - 7 \leq 8$
 f) $2 \leq 9 - 7x \leq 6$

Solve the equation.

- 13) a) $|r - 5| = 7$
 b) $|2m + 3| + 5 = 14$
 c) $|8f - 8| - 2 = -5$

Solve the absolute value inequality. Write the solution set using interval notation.

- 14) a) $|3x + 2| < 10$
 b) $|b + 4| - 3 > 5$
 c) $\left| \frac{5 - 2x}{6} \right| \leq 2$

Solve the inequality graphically and express the solution in interval notation.

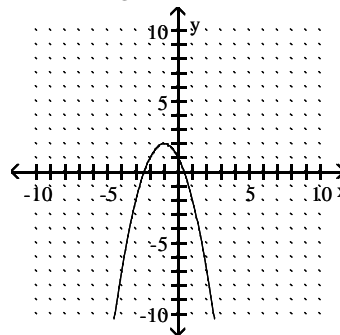
- 15) $|x - 2| < 4$

Determine the vertex of the graph of f .

- 16) a) $f(x) = (x + 3)^2 + 5$
 b) $g(x) = (x - 6)^2$
 c) $h(x) = 3x^2 - 24x + 47$

Use the graph of the quadratic function to determine the requested information.

- 17) a) Determine whether $a > 0$ or $a < 0$.
 b) Find the vertex.
 c) Write the equation for the axis of symmetry.
 d) Determine the intervals where $f(x)$ is increasing
 e) Determine the intervals where $f(x)$ is decreasing.



Sketch a graph of f .

- 18) a) $f(x) = x^2 + 1$
 b) $g(x) = (x + 5)^2 - 6$
 c) $h(x) = -x^2 + 4x + 2$

Find the requested information for the given function. Then graph the function.

- 19) $f(x) = 3x^2 - 6x - 9$
 a) vertex b) y-intercept:
 c) x-intercept(s), if any d) graph the function

Write the equation as $f(x) = a(x - h)^2 + k$. Identify the vertex.

- 20) $f(x) = x^2 + 6x - 4$

Solve the problem. Round to the nearest tenth, if necessary.

- 21) A person standing close to the edge on top of a 336-foot building shoots an arrow upward. The arrow's height (in feet), s , above the ground after t seconds is given by the function $s(t) = -16t^2 + 64t + 336$.
 a) After how many seconds does the arrow reach its maximum height?
 b) What is the maximum height the arrow reaches?
 c) When does the arrow hit the ground?

Find $f(x) = a(x - h)^2 + k$ so that f models the data exactly.

22)

x	-5	-4	-3	-2	-1
y	-2	4	6	4	-2

Solve the quadratic equation.

23) a) $x^2 - 9x + 20 = 0$

b) $7x^2 = 42x$

c) $(p - 9)^2 = 15$

d) $x^2 + 6x + 9 = 10$

e) $2x^2 + 8x = -3$

Solve by completing the square.

24) a) $p^2 - 12p + 20 = 0$

b) $x^2 + 4x = 7$

c) $y^2 + 5y - 5 = 0$

Find the discriminant and use it to determine the number of real solutions.

25) a) $v^2 + 7v - 2 = 0$

b) $2y^2 = -2y - 5$

c) $9x^2 + 6x + 1 = 0$

Solve the problem.

- 26) The position of an object moving in a straight line is given by $s = 2t^2 - 3t$, where s is in meters and t is the time in seconds the object has been in motion. How long (to the nearest tenth) will it take the object to move 14 meters?

Write the expression in standard form.

27) a) $(2 - 4i) + (8 + 9i)$

b) $(5 + 4i) - (-8 + i)$

Multiply and write the result in standard form.

28) a) $2i(4 - 5i)$ b) $(8 + 6i)(5 - 7i)$

c) $(7 - 4i)(7 + 4i)$ d) $8i(-2 - 3i)^2$

Divide and write the result in standard form.

29) a) $\frac{7 + 8i}{3 - 2i}$ b) $\frac{9 + 8i}{5 + 2i}$

Solve the quadratic equation. Write complex solutions in standard form.

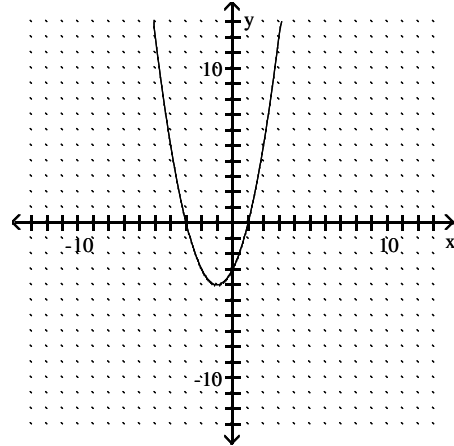
30) a) $x^2 - 8x + 52 = 0$

b) $x(x - 12) = -40$

c) $-6x^2 + 3x - 2 = 0$

Use the given graph of $f(x) = ax^2 + bx + c$ to solve the specified inequality.

31) $f(x) > 0$

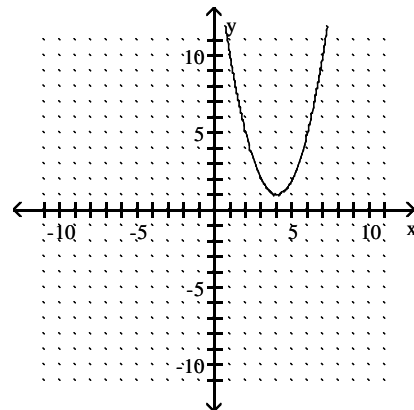


Solve the inequality.

32) $x^2 - 3x - 10 \leq 0$

The given graph represents a translation of the graph of $y = x^2$. Write the equation of the graph.

33)



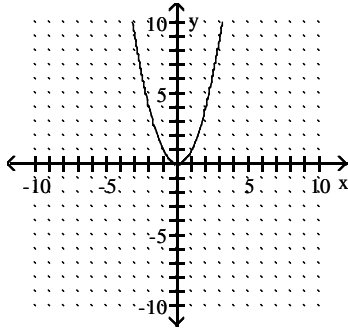
Use transformations of the graphs of $y = x^2$ or $y = |x|$ to sketch a graph of f by hand.

34) a) $f(x) = x^2 - 5$

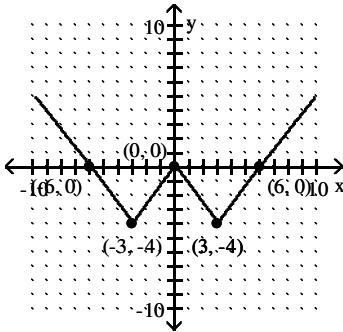
b) $g(x) = |x - 4| - 2$

Use the accompanying graph of $y = f(x)$ to sketch the graph of the indicated equation.

35) a) $y = f(x - 5) - 3$



b) $y = -\frac{1}{2}f(x)$

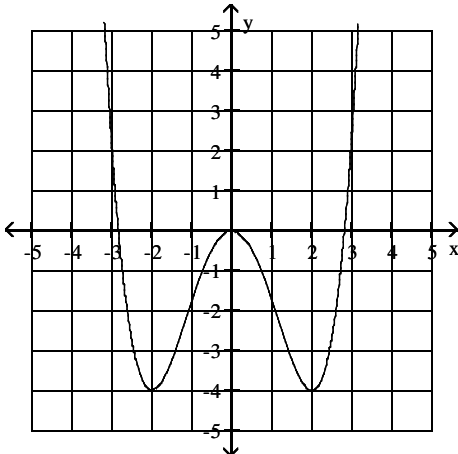


If the following is a polynomial function, then state its degree and leading coefficient. If it is not, then state this fact.

36) $f(x) = -10x^3 + 15 - 18x^4 + 11x^9 + 9x^2$

Determine any local or absolute extrema.

37) Use the graph of f to estimate the extrema.



Determine any local or absolute extrema as indicated.

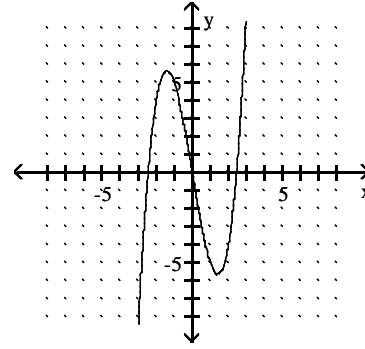
38) a) $f(x) = a x^2 + 9$

b) $g(x) = 5 - x^2$

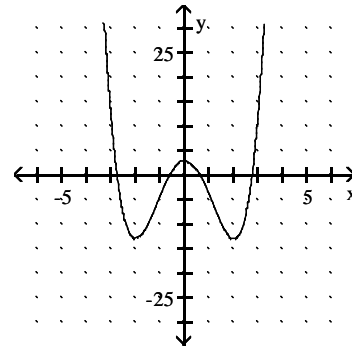
c) $h(x) = |x - 4|$

Use the graph to determine if f is odd, even, or neither.

39) a)



b)



Determine whether the function is odd, even, or neither.

40) a) $f(x) = 2x^2 - 3$

b) $f(x) = (x - 6)(x + 7)$

c) $f(x) = -9x^3 + 7x$

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

e)

x	-3	-2	-1	0	1	2	3
$f(x)$	-29.0	-17	-5.01	5	-5.01	-17	-29.0

Solve the problem.

41) a) Complete the table if the function f is even.

x	-8	-4	4	8
$f(x)$	-6	?	-2	?

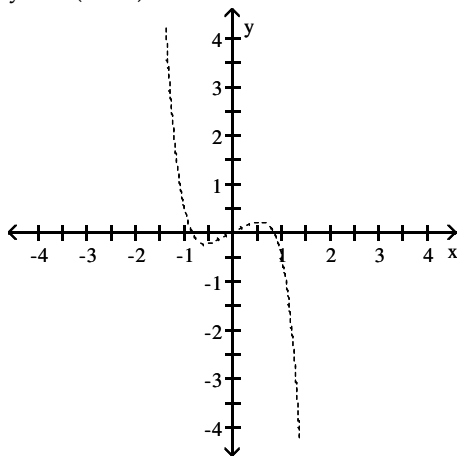
b) Complete the table if the function f is odd.

x	-2	-1	0	1	2
$f(x)$	-9	-6	?	?	?

Use the graph of $f(x) = \frac{1}{2}x - x^5$ and translations of graphs

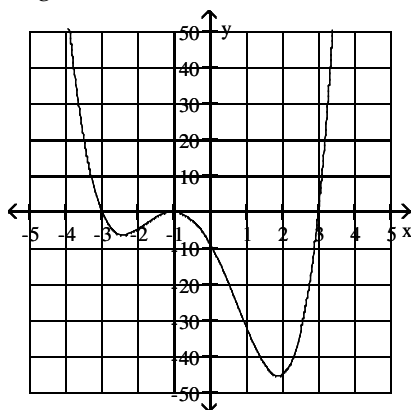
to sketch the graph of the equation.

$$42) y = -f(x - 2) + 1$$



Solve the problem.

- 43) Use the graph of the polynomial function f to estimate the x -intercepts, state the number of turning points, and determine the minimum degree of f .



State the end behavior of the graph of f .

- 44) a) $f(x) = 3x - \frac{1}{6}x^3$
 b) $f(x) = x^4 + 2x^3 + 3x^2 - 3$
 c) $f(x) = 0.2x^5 - 4x^2 + 6$

Divide. Write with positive exponents.

$$45) \frac{48x^9 + 36x^8 - 12x^7 + 18x^5 + 7x^3}{6x^7}$$

Provide an appropriate response.

- 46) Use division to express the (Dividend) as (Divisor)(Quotient) + (Remainder).

$$\frac{3x^3 - x^2 + 2x + 5}{x + 1}$$

Use synthetic division to divide the first polynomial by the second.

$$47) x^5 - 2x^4 - 5x^3 + x^2 - x + 28 \quad x + 2$$

Use the given information about the polynomial function $f(x)$ to write its complete factored form.

$$48) f(x) = x^3 + 2x^2 - 9x - 18; \text{ zeros: } -2, -3, 3$$

Write the complete factored form of the polynomial $f(x)$, given the indicated zero.

$$49) \text{ a) } f(x) = x^3 + 2x^2 - 16x - 32$$

-4 is a zero.

$$\text{ b) } f(x) = 3x^3 - 20x^2 + 36x - 16$$

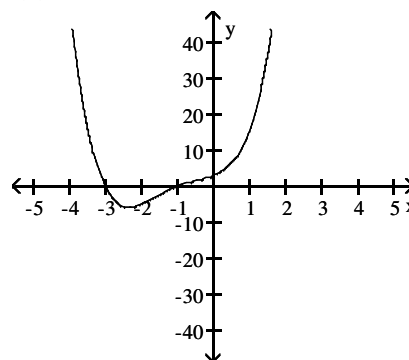
2 is a zero.

Write a polynomial $f(x)$ in complete factored form that satisfies the conditions. Let the leading coefficient be 1.

- 50) Degree 3; zeros: -3 with multiplicity 2, and 1 with multiplicity 1

The graph and equation of a polynomial $f(x)$ are given. Determine the number of real zeros and the number of imaginary zeros.

$$51) f(x) = x^4 + 4x^3 + 4x^2 + 4x + 3$$



Use the rational zero test to find all the possible rational zeros of $f(x)$. Then find all the zeros.

$$52) f(x) = 2x^3 + 3x^2 - 11x - 6$$

Find the complete factored form of the polynomial that satisfies the given conditions. Then write the expanded form of the function.

- 53) a) Degree 2, leading coefficient 4, zeros at $-7i$ and $7i$
 b) Degree 3, leading coefficient -3 , zeros at 2, $4i$, and $-4i$

Find the zeros of $f(x)$, given that one zero is k .

- 54) a) $f(x) = x^3 + 7x^2 - 3x - 21$ $k = -7$
 b) $f(x) = x^3 - 11x^2 + 39x - 29$ $k = 1$
 c) $f(x) = x^4 - 5x^2 - 36$ $k = -2i$

Solve the polynomial equation.

- 55) a) $x^3 - 5x^2 + 6x = 0$
 b) $x^3 + 2x^2 + 9x + 18 = 0$
 c) $3x^4 - 15x^3 + 30x^2 - 60x + 72 = 0$

Find the domain of f .

- 56) a) $f(x) = \frac{17}{11 - x}$
 b) $g(x) = \frac{x - 2}{x^2 + 9x}$
 c) $h(x) = \frac{(x - 3)(x + 3)}{x^2 - 1}$

Find any vertical and horizontal asymptotes.

- 57) a) $f(x) = \frac{7x + 4}{2x - 1}$
 b) $f(x) = \frac{x - 6}{x^2 - 4}$
 c) $f(x) = \frac{6x^3 + 3x - 3}{x^2 + 4x - 21}$

Solve the equation.

- 58) a) $m - \frac{6}{m} = 5$
 b) $\frac{1}{b} + \frac{1}{b - 4} = \frac{b - 3}{b - 4}$
 c) $\frac{2}{x} = \frac{x}{5x - 12}$
 d) $\frac{5 - x}{x} + \frac{3}{4} = \frac{7}{x}$

Solve the rational inequality.

- 59) a) $\frac{x - 4}{x + 1} > 0$
 b) $\frac{3}{x + 3} > \frac{5}{2}$
 c) $\frac{8}{x - 3} \geq \frac{6}{x - 1}$

Use translations of the graph of $f(x) = \sqrt{x}$ to help sketch a graph of g .

60) $g(x) = \sqrt{x - 3} + 2$

Solve the equation.

- 61) a) $\sqrt{8q - 7} = 7$
 b) $\sqrt{4x - 3} = 2x - 3$
 c) $\sqrt[3]{3x - 2} = \sqrt[3]{4x + 6}$
 d) $x^{2/5} = \frac{1}{4}$
 e) $4x^{1/2} - 7 = 13$

Solve the problem.

- 62) One study showed that for a male fiddler crab weighing over 0.75 gram, the weight of its claws can be estimated by $w(x) = 0.445x^{1.25}$, where x is the weight of the crab in grams and w is the weight of the claws in grams. Round to the nearest hundredth of a gram.
 a) Predict the weight of the claws of a 2-gram crab.
 b) Approximate the weight of a crab that has 0.6-gram claws.

Answer the question.

- 63) For $g(x) = \sqrt{x + 10}$ and $f(x) = 2x - 5$
 a) what is the domain of $(f + g)(x)$?
 b) what is the domain of $(f \circ g)(x)$?

Find and simplify the indicated composite for the pair of functions.

- 64) Given $f(x) = -2x + 2$ and $g(x) = 4x + 5$,
 find $(g \circ f)(x)$.
 b) Given $f(x) = \frac{3}{x - 4}$ and $g(x) = \frac{5}{6x}$,
 find $(f \circ g)(x)$.

Complete numerical representations for the functions f and g are given. Evaluate the expression, if possible.

- 65) a) $(f \circ g)(6)$ b) $(f \circ g)(-2)$

x	-2	-5	11	12
$f(x)$	6	11	2	12

x	-5	-2	1	6
$g(x)$	1	-5	5	11

Find the functions f and g so that $F(x) = (f \circ g)(x)$.

- 66) a) $F(x) = \frac{6}{\sqrt{4x + 5}}$ b) $F(x) = (5x + 14)^3$

Find either a linear or an exponential function that models the data in the table.

67)

x	0	1	2	3	4
y	6	24	96	384	1536

68)

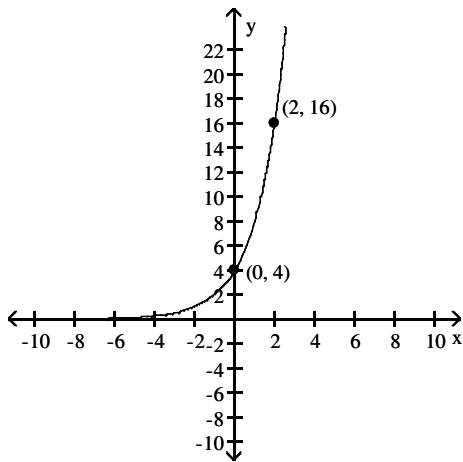
x	-2	-1	0	1	2
y	8	6.5	5	3.5	2

Find C and a so that $f(x) = Ca^x$ satisfies the given conditions. Then write the equation.

69) $f(0) = 3$ and $f(3) = 24$
 $g(1) = 18$ and $g(2) = 27$

Determine a formula for the exponential function.

70)



Graph the exponential function.

71) a) $y = 4^x$
 b) $y = \left(\frac{1}{3}\right)^x$

Solve the equation. Give an exact answer and, where appropriate, use the change of base formula to give an approximate answer rounded to 4 decimal places.

72) a) $10^x = 0.01$ b) $10^x = 125$
 c) $2^x = 203$ d) $4^{-x} = \frac{1}{256}$
 e) $2(1 + 2x) = 8$ f) $\left(\frac{1}{4}\right)^x = 19$
 g) $5(1.3)^x + 4 = 104$ h) $e^{-x} = 551$

Solve the equation symbolically. Give an exact answer and, where appropriate, also give a decimal approximation rounded to 4 decimal places.

73) a) $\log_8 x = 5$ b) $\log_{25} x = \frac{1}{2}$
 c) $\log_4 x = -3$ d) $\log_3 x = 1.5$
 e) $\ln 3x = 2$ f) $2\log_4 x + 5 = 15$

Solve the problem.

74) Suppose the amount of a radioactive element remaining in a sample of 100 milligrams after x years can be described by $A(x) = 100e^{-0.01854x}$.

- a) How much is remaining after 202 years? (Round to the nearest hundredth of a milligram).
 b) How long does it take for half of the sample to decay? (Round to the nearest tenth of a year.)

Write the augmented matrix for the system.

75) a) $9x + 2y = 28$
 $6x + 8y = 52$
 b) $9x + 3z = 33$
 $4y + 7z = 21$
 $7x + 5y + 9z = 54$

Write the augmented matrix for the system, then use your calculator to find the solution to the system.

76) $2x + 3y + z = 2$
 $5x - 4y - z = 11$
 $4x + y + 4z = -11$

Solve.

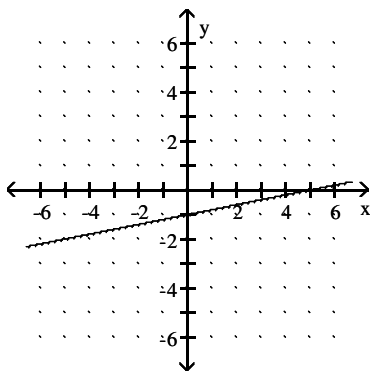
77) $x - y + 3z = -10$
 $5x + z = -4$
 $x + 2y + z = -8$
 78) $x + 5y + 4z = -11$
 $3y + 4z = -2$
 $z = 1$

Answer Key

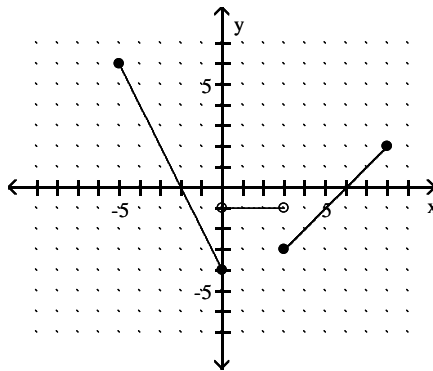
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- 1) a) (i) $x^2 + 2xh + h^2 - 5x - 5h$
 (ii) $2x + h - 5$
 b) (i) $5x + 5h - 11$
 (ii) 5
 c) (i) $4x^2 + 8xh + 4h^2 + 10x + 10h - 9$
 (ii) $8x + 4h + 10$
- 2) increasing: $[-2, 0] \cup [1, \infty)$; decreasing: $(-\infty, -2] \cup [0, 1]$
- 3) a) Domain: $\{-15, -14, -30, -16, 15\}$
 Range: $\{3, 5, 0\}$
 Function
 b) Domain: $\{-4, -3, -2, -1, 0\}$
 Range: $\{0.9, -0.9, 1.8, -1.8, 1.2, -1.2, 2.4, -2.4\}$
 Not a Function
- 4) -0.834 million dollars
- 5) $f(x) = -3x + 5$
- 6) a) Domain: All real numbers
 Range: $\{y \mid y \geq -5\}$
 Function
 b) Domain: $\{x \mid x \geq 0\}$
 Range: $\{y \mid y \geq 4\}$
 Function
 c) Domain: $\{x \mid x \leq 3\}$
 Range: All real numbers
 Not a function

7)

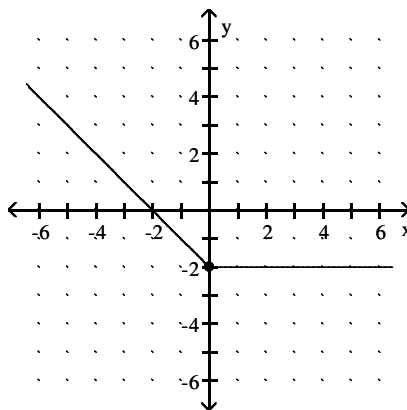


8) a)



Not continuous

b)



Continuous

- 9) $y = -\frac{11}{10}x + \frac{18}{5}$
- 10) a) $y = \frac{4}{7}x + \frac{22}{7}$
 b) $y = \frac{8}{5}x + 17$
- 11) a) All real numbers
 b) $\{x \mid x \leq 9\}$
 c) All real numbers
 d) $\{x \mid x \neq 4, x \neq -4\}$
 e) All real numbers
 f) $\{x \mid x \geq -6, x \neq -7, x \neq 2\}$
- 12) a) $(-\infty, 11]$ b) $(-2, \infty)$
 c) $(-\infty, 6]$ d) $(-\infty, \frac{62}{9})$
 e) $(\frac{2}{5}, \frac{3}{2}]$ f) $[\frac{3}{7}, 1]$
- 13) a) -2, 12
 b) 3, -6
 c) No solution

Answer Key

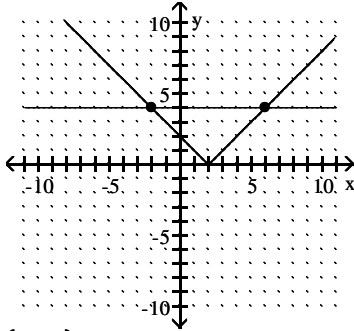
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14) a) $\left[-4, \frac{8}{3}\right)$

b) $(-\infty, -12) \cup (4, \infty)$

c) $\left[-\frac{7}{2}, \frac{17}{2}\right]$

15)



$(-2, 4)$

16) a) $(-3, 5)$

b) $(6, 0)$

c) $(4, -1)$

17) a) $a < 0$

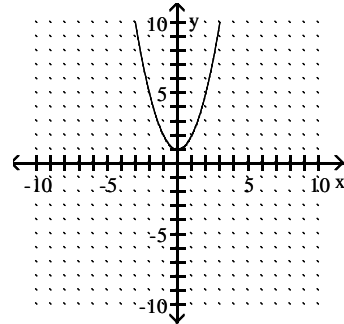
b) $(-1, 2)$

c) $x = -1$

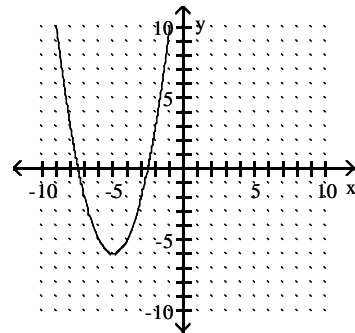
d) increasing on $(-\infty, -1]$

e) decreasing on $[-1, \infty)$

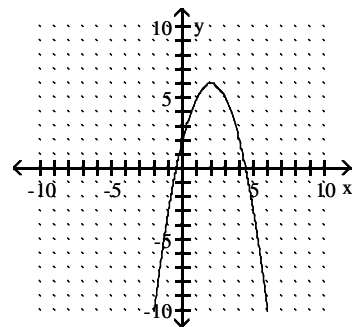
18) a)



b)



c)

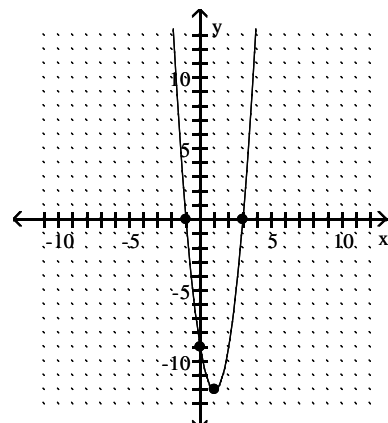


19) a) $(1, -12)$

b) $(0, -9)$

c) $(-1, 0), (3, 0)$

d)



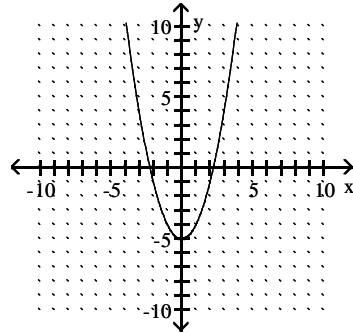
20) $f(x) = (x + 3)^2 - 13; (-3, -13)$

Answer Key

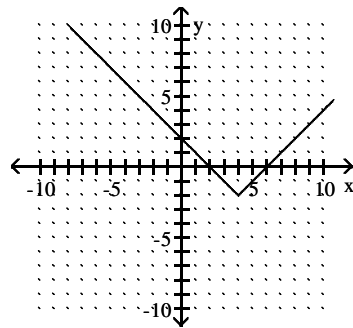
Testname: CAREVIEWFINAL_F11

- 21) a) 2 seconds
 b) 400 feet
 c) 7 seconds
- 22) $f(x) = -2(x + 3)^2 + 6$
- 23) a) 4, 5
 b) 0, 6
 c) $9 \pm \sqrt{15}$
 d) $-3 \pm \sqrt{10}$
 e) $\frac{-4 \pm \sqrt{10}}{2}$
- 24) a) 10, 2
 b) $-2 \pm \sqrt{11}$
 c) $\frac{-5 \pm 3\sqrt{5}}{2}$
- 25) a) 57, Two real solutions
 b) -18, No real solutions
 c) 0, One real solution
- 26) 3.5 sec
- 27) a) $10 + 5i$
 b) $13 + 3i$
- 28) a) $10 + 8i$ b) $82 - 26i$
 c) 65 d) $-96 - 40i$
- 29) a) $\frac{5}{13} + \frac{38}{13}i$
 b) $\frac{61}{29} + \frac{22}{29}i$
- 30) a) $4 \pm 6i$
 b) $6 \pm 2i$
 c) $\frac{1}{4} \pm \frac{i\sqrt{39}}{12}$
- 31) $(-\infty, -3) \cup (1, \infty)$
- 32) $-2 \leq x \leq 5$
- 33) $y = (x - 4)^2 + 1$

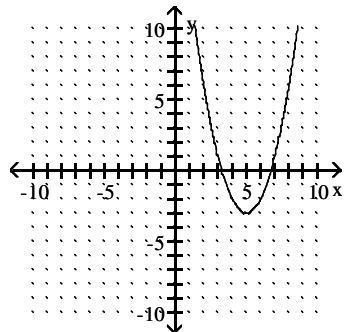
34) a)



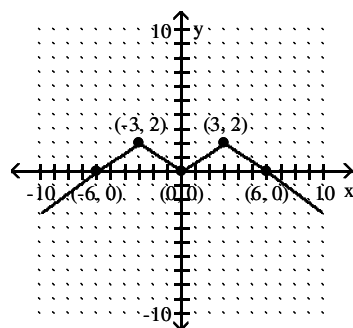
b)



35) a)



b)

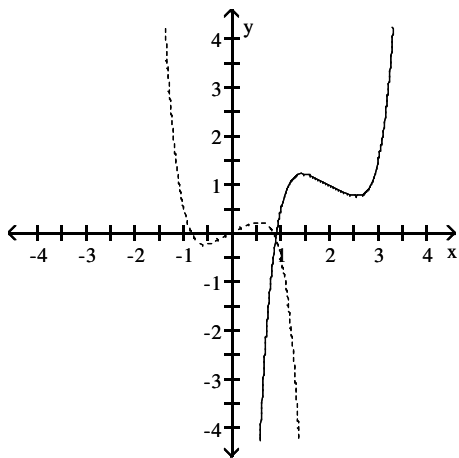


- 36) Degree: 9; leading coefficient: 11
- 37) Local maximum: 0; local minimum: -4
 No absolute maximum; absolute minimum: -4
- 38) a) Local minimum: 9; absolute minimum: 9
 b) Local maximum: 5; absolute minimum: 5
 c) Local minimum: 0; absolute minimum: 0
- 39) a) Odd b) Even

Answer Key

Testname: CAREVIEWFINAL_F11

- 40) a) Even
 b) Neither
 c) Odd
 d) Neither
 e) Even
 41) a) -2, -6
 b) 0, 6, 9
 42)



- 43) x-intercepts: -3, -1, 3
 number of turning points: 3
 minimum degree: 4
 44) a) Up on left side, down on right side
 b) Up on both sides
 c) Down on left side, up on right side

45) $8x^2 + 6x - 2 + \frac{3}{x^2} + \frac{7}{6x^4}$

46) $(x + 1)(3x^2 - 4x + 6) - 1$

47) $x^4 - 4x^3 + 3x^2 - 5x + 9 + \frac{10}{x + 2}$

48) $f(x) = (x + 2)(x + 3)(x - 3)$

49) a) $f(x) = (x - 4)(x + 2)(x + 4)$

b) $f(x) = 3\left(x - \frac{2}{3}\right)(x - 4)(x - 2)$

50) $f(x) = (x + 3)^2(x - 1)$

51) Two real zeros; two imaginary zeros

52) Possible rational zeros: $\pm 1, \pm 2, \pm 3, \pm 6, \pm \frac{1}{2}, \pm \frac{3}{2}$

Zeros: -3, 2, $-\frac{1}{2}$

53) a) $f(x) = 4(x - 7i)(x + 7i)$

$f(x) = 4x^2 + 196$

b) $g(x) = -3(x - 2)(x + 4i)(x - 4i)(x + 16)$

$g(x) = -3x^3 - 42x^2 + 96$

54) a) $-7, \pm\sqrt{3}$

b) $1, 5 \pm 2i$

c) $\pm 2i, \pm 3$

55) a) $x = 0, 2, 3$

b) $x = -2, -3i, 3i$

c) $x = 2, 3, -2i, 2i$

56) a) $\{x \mid x \neq 11\}$

b) $\{x \mid x \neq 0, x \neq -9\}$

c) $\{x \mid x \neq \pm 1\}$

57) a) V.A.: $x = \frac{1}{2}$; H.A.: $y = \frac{7}{2}$

b) V.A.: $x = 2, x = -2$; H.A.: $y = 0$

c) V.A.: $x = 3, x = -7$; H.A.: none

58) a) $\{-1, 6\}$ b) $\{1\}$

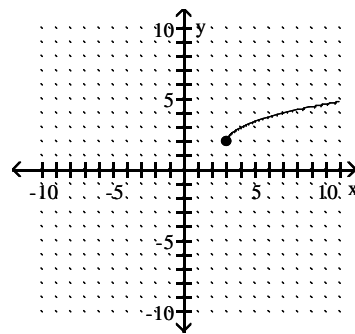
c) $\{4, 6\}$ d) $\{-8\}$

59) a) $(-\infty, -1) \cup (4, \infty)$

b) $\left[-3, -\frac{9}{5}\right]$

c) $[-5, 1) \cup (3, \infty)$

60)



61) a) 7 b) 3

c) -8 d) $\frac{1}{32}$

e) 25

62) a) $f(2) = 1.06$ grams

b) about 1.26 grams

63) a) $\{x \mid x \geq -10\}$

b) $\{x \mid x \geq -\frac{5}{2}\}$

64) a) $-8x + 13$

b) $\frac{18x}{5 - 24x}$

65) a) 2

b) 11

66) Answers may vary. One possible answer is:

a) $f(x) = 6\sqrt{x}$, $g(x) = 4x + 5$

b) $f(x) = x^3$, $g(x) = 5x + 14$

67) $f(x) = 6(4)^x$

68) $f(x) = -1.5x + 5$

69) a) $C = 3, a = 2; f(x) = 3(2)^x$

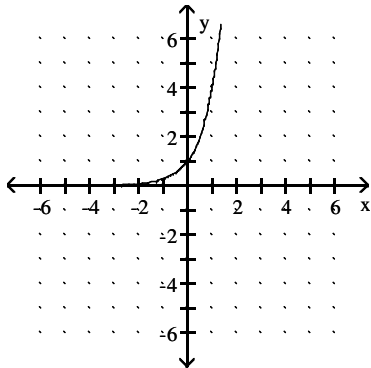
b) $C = 12, a = \frac{3}{2}; g(x) = 12\left(\frac{3}{2}\right)^x$

Answer Key

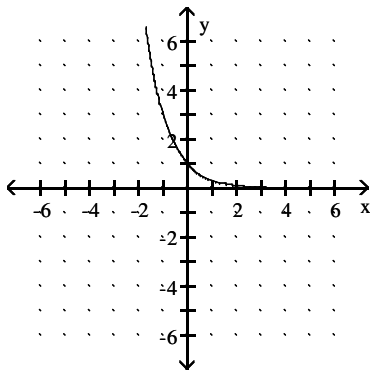
Testname: CAREVIEWFINAL_F11

70) $f(x) = 4 \cdot 2^x$

71) a)



b)



75) a) $\begin{bmatrix} 9 & 2 & | & 28 \\ 6 & 8 & | & 52 \end{bmatrix}$

b) $\begin{bmatrix} 9 & 0 & 3 & | & 33 \\ 0 & 4 & 7 & | & 21 \\ 7 & 5 & 9 & | & 54 \end{bmatrix}$

76) Matrix: $\begin{bmatrix} 2 & 3 & 1 & | & 2 \\ 5 & -4 & -1 & | & 11 \\ 4 & 1 & 4 & | & -11 \end{bmatrix}$

Solution: (2, 1, -5)

77) (0, -2, -4)

78) (-5, -2, 1)

72) a) $x = -2$

b) $x = \log 125$, $x \approx 2.0970$

c) $x = \log_2 203$, $x \approx 7.6653$

d) $x = 4$

e) $x = 1$

f) $x = -\frac{\ln 19}{\ln 4}$, $x \approx -2.1240$

g) $x = \frac{\log 20}{\log 1.3}$, $x \approx 11.4182$

h) $x = -\ln 551$, $x \approx -6.3117$

73) a) $x = 32,768$

b) $x = 5$

c) $x = \frac{1}{64}$

d) $x = 31.5$
 $x \approx 5.1962$

e) $x = \frac{1}{3}e^2$

$x \approx 2.4630$

f) $x = 25,000$

74) a) 2.36 milligrams

b) 37.4 years