Name_____ atfm1314bli2810yes

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VIDEOS (ON DEMAND 100)

BLITZER COLLEGE ALGEBRA 5e

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Graph the equation.

1) $y = -|x| + 2$

1) _____
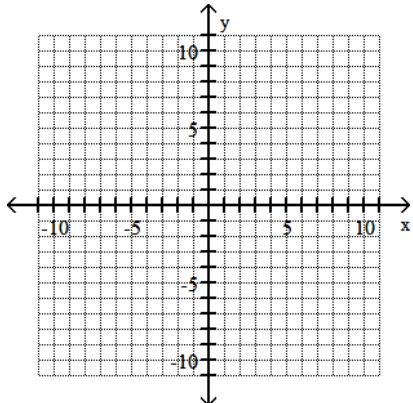
A)
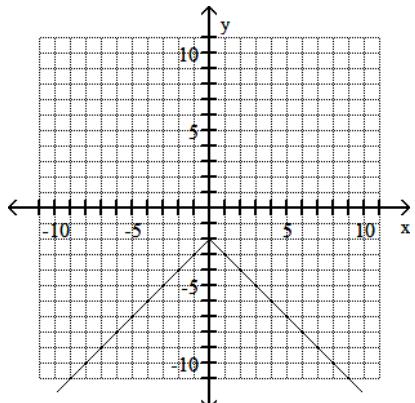
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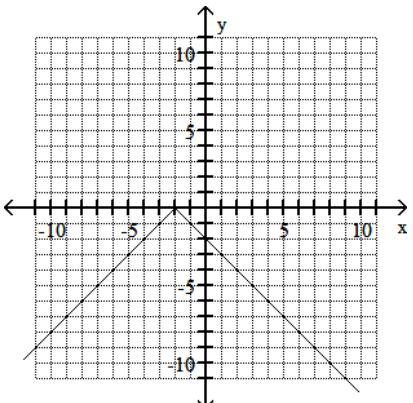
C)
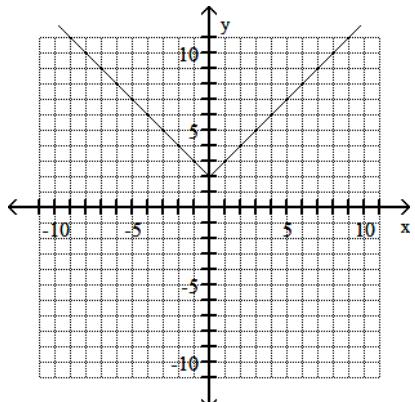
D)
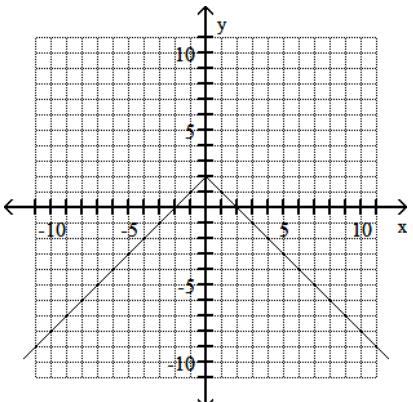
Answer: D

Objective: (1.1) Graph Equations in the Rectangular Coordinate System

ALVAREZ VIDEO 1

Solve the equation.

2) $\dfrac{6}{y+4} - \dfrac{4}{y-4} = \dfrac{6}{y^2-16}$

2) _____

    A) {46}   B) {23}   C) $\{\sqrt{34}\}$ D) {-23}

Answer: B
Objective: (1.2) Solve Rational Equations with Variables in the Denominators

ALVAREZ VIDEO 2

Divide and express the result in standard form.

3) $\dfrac{7-5i}{6+5i}$

3) _____

    A) $\dfrac{17}{11} - \dfrac{65}{11}i$ B) $\dfrac{17}{61} - \dfrac{65}{61}i$ C) $\dfrac{67}{61} - \dfrac{5}{61}i$ D) $\dfrac{67}{11} - \dfrac{65}{11}i$

Answer: B
Objective: (1.4) Divide Complex Numbers

ALVAREZ VIDEO 3

Solve the equation by factoring.

4) $12x^2 + 31x + 20 = 0$

4) _____

    A) $\left\{-\dfrac{5}{12}, -\dfrac{1}{5}\right\}$ B) $\left\{\dfrac{5}{4}, -\dfrac{4}{3}\right\}$ C) $\left\{\dfrac{5}{4}, \dfrac{4}{3}\right\}$ D) $\left\{-\dfrac{5}{4}, -\dfrac{4}{3}\right\}$

Answer: D
Objective: (1.5) Solve Quadratic Equations by Factoring

ALVAREZ VIDEO 4

Solve the equation by the square root property.

5) $(5x + 5)^2 = 100$

5) _____

    A) {-3, 1}   B) {-21, 21}   C) {1, 3}   D) {0, 1}

Answer: A
Objective: (1.5) Solve Quadratic Equations by the Square Root Property

ALVAREZ VIDEO 5

Solve the equation by completing the square.

6) $x^2 + 14x + 33 = 0$

6) _____

    A) {-11, 44}   B) $\{-\sqrt{33}, \sqrt{33}\}$ C) {3, 11}   D) {-11, -3}

Answer: D
Objective: (1.5) Solve Quadratic Equations by Completing the Square

ALVAREZ VIDEO 6

Solve the equation using the quadratic formula.

7) $4x^2 = -12x - 2$ 7) _____

A) $\left\{\dfrac{-3 - \sqrt{7}}{8}, \dfrac{-3 + \sqrt{7}}{8}\right\}$

B) $\left\{\dfrac{-3 - \sqrt{11}}{2}, \dfrac{-3 + \sqrt{11}}{2}\right\}$

C) $\left\{\dfrac{-12 - \sqrt{7}}{2}, \dfrac{-12 + \sqrt{7}}{2}\right\}$

D) $\left\{\dfrac{-3 - \sqrt{7}}{2}, \dfrac{-3 + \sqrt{7}}{2}\right\}$

Answer: D

Objective: (1.5) Solve Quadratic Equations Using the Quadratic Formula

ALVAREZ VIDEO 7

8) $x^2 - 14x + 53 = 0$ 8) _____

A) {7 – 2i, 7 + 2i}   B) {7 – 4i, 7 + 4i}   C) {5, 9}   D) {7 + 2i}

Answer: A

Objective: (1.5) Solve Quadratic Equations Using the Quadratic Formula

ALVAREZ VIDEO 8

Solve the radical equation, and check all proposed solutions.

9) $\sqrt{22x + 11} = x + 6$ 9) _____

A) {-5}   B) {3}   C) {-4}   D) {5}

Answer: D

Objective: (1.6) Solve Radical Equations

ALVAREZ --VIDEO 9

10) $x - \sqrt{3x - 2} = 4$ 10) _____

A) {2, 9}   B) {-1}   C) {9}   D) {1, 2}

Answer: C

Objective: (1.6) Solve Radical Equations

ALVAREZ--VIDEO 10

Solve the absolute value equation or indicate that the equation has no solution.

11) $|x - 4| = 6$ 11) _____

A) {-10}   B) {2, 10}   C) {-2, 10}   D) ∅

Answer: C

Objective: (1.6) Solve Equations Involving Absolute Value

ALVAREZ VIDEO 11

Solve the absolute value inequality. Other than $\emptyset$, use interval notation to express the solution set and graph the solution set on a number line.

12) $|x + 2| < 2$ 12) _____
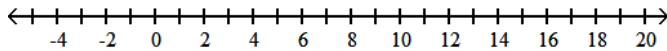
A) $\emptyset$
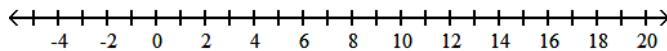
B) $[-4, 0]$
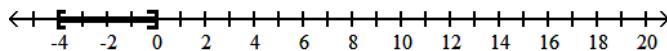
C) $(-\infty, -4) \cup (0, \infty)$
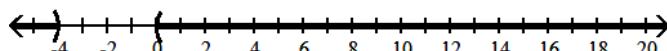
D) $(-4, 0)$
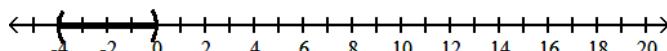
Answer: D
Objective: (1.7) Solve Absolute Value Inequalities

ALVAREZ VIDEO 12

Evaluate the function at the given value of the independent variable and simplify.

13) $f(x) = 4x^2 - 2x + 7$; $f(x - 1)$ 13) _____

A) $4x^2 - 10x + 13$ B) $4x^2 + 26x + 9$ C) $4x^2 - 10x + 9$ D) $-10x^2 + 4x + 13$

Answer: A
Objective: (2.1) Evaluate a Function

ALVAREZ VIDEO 13

Identify the intercepts.

14)   14) _____
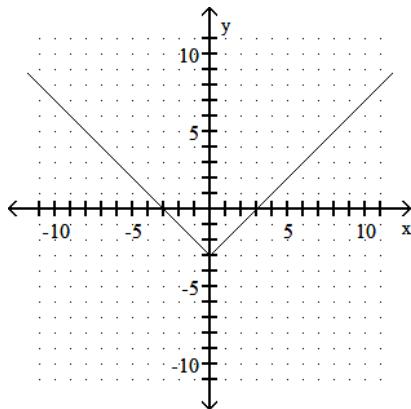
A) $(3, 0), (-3, 0)$ B) $(0, -3)$
C) $(3, 0), (-3, 0), (0, 0)$ D) $(3, 0), (-3, 0), (0, -3)$

Answer: D
Objective: (2.1) Identify Intercepts from a Function's Graph.

ALVAREZ VIDEO 14

4

Use the graph of the given function to find any relative maxima and relative minima.

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

15) _____
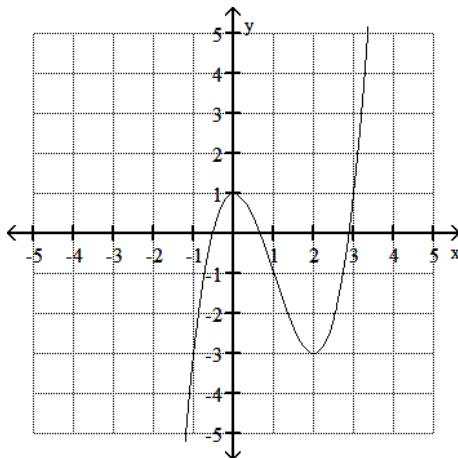
A) maximum: (0, 1); minimum: (2, -3)   B) no maximum or minimum

C) maximum: none; minimum: (2, -3)   D) maximum: (0, 1); minimum: none

Answer: A

Objective: (2.2) Use Graphs to Locate Relative Maxima or Minima

ALVAREZ--VIDEO 15

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

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

16) _____

A) Odd   B) Even   C) Neither

Answer: B

Objective: (2.2) Identify Even or Odd Functions and Recognize Their Symmetries

ALVAREZ VIDEO 16

Graph the function.

17) $f(x) = \begin{cases} x + 1 & \text{if } x < 1 \\ -5 & \text{if } x \geq 1 \end{cases}$

17) _____

5

A)

(-1, 2)

5

-5   5   x

-5
(-1, -5)

B)

(-1, 2)

5

-5   5   x

(-1, -5)
-5

C)

5

(1, 2)

-5   5   x

(1, -5)
-5

D)

5

(1, 2)

-5   5   x

(1, -5)
-5
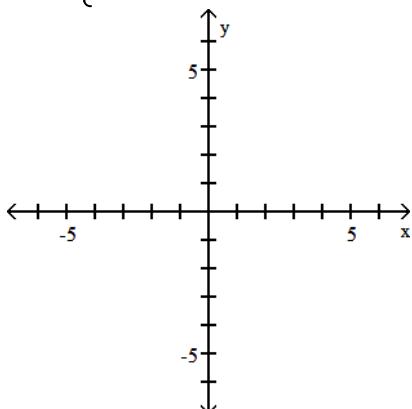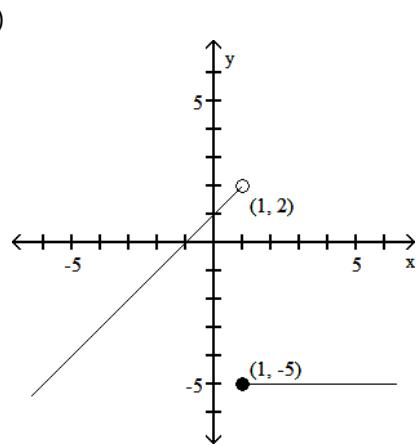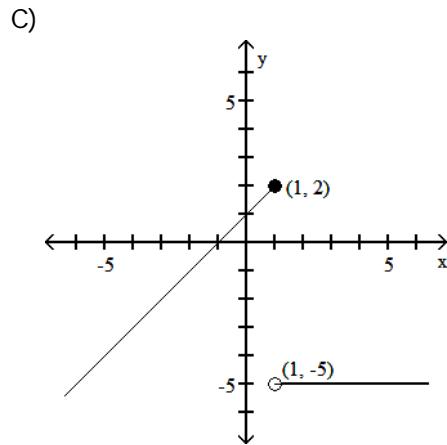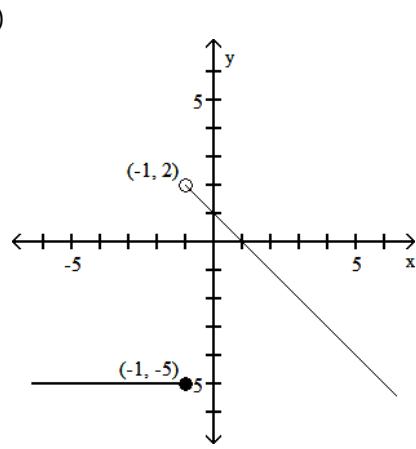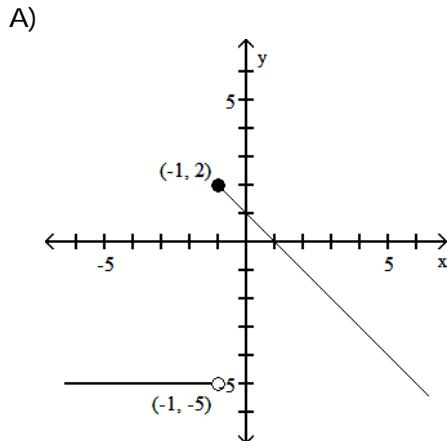
Answer: D
Objective: (2.2) Understand and Use Piecewise Functions

ALVAREZ--VIDEO 17

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

18) $f(x) = x^2 + 9x - 2$ 18) _____

   A) $2x + h - 2$ B) $\dfrac{2x^2 + 2x + 2xh + h^2 + h - 4}{h}$

   C) $2x + h + 9$ D) 1

Answer: C
Objective: (2.2) Find and Simplify a Function's Difference Quotient

ALVAREZ-- VIDEO 18

Use the given conditions to write an equation for the line in slope-intercept form.

   19) Slope = -3, passing through (-7, 2)   19) _____
       A) $y = -3x + 19$ B) $y - 2 = -3x + 7$ C) $y - 2 = x + 7$ D) $y = -3x - 19$

   Answer: D
   Objective: (2.3) Write and Graph the Slope-Intercept Form of the Equation of a Line

   ALVAREZ VIDEO 19

Find the average rate of change of the function from x_1 to x_2.

20) $f(x) = -3x^2 - x$ from $x_1 = 5$ to $x_2 = 6$ 20) _____

A) $-\dfrac{1}{6}$ B) -2 C) $\dfrac{1}{2}$ D) -34

Answer: D
Objective: (2.4) Find a Function's Average Rate of Change

ALVAREZ VIDEO 20

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

21) $h(x) = |x - 5| - 5$ 21) _____
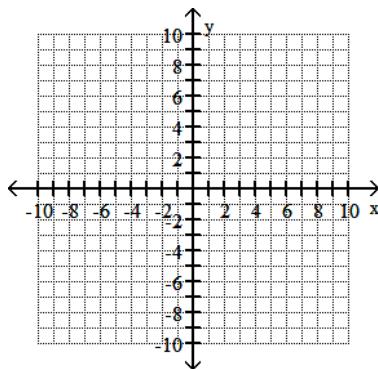
A)
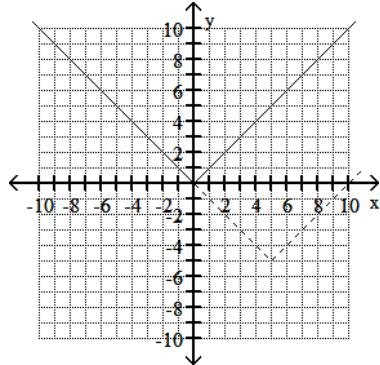
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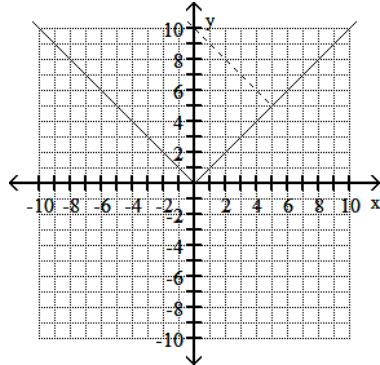
C)
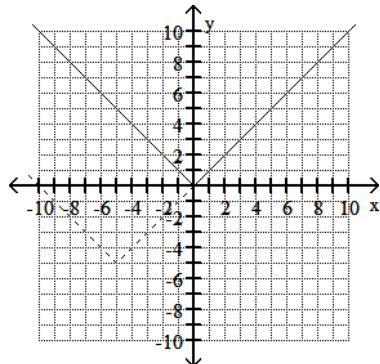
D)
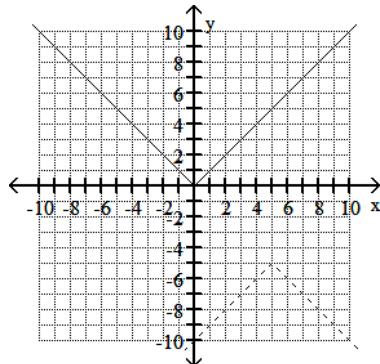
Answer: A
Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ--VIDEO 21

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

22) g(x) = f(x + 1)

22) _____

y = f(x)

A)

B)

C)

D)
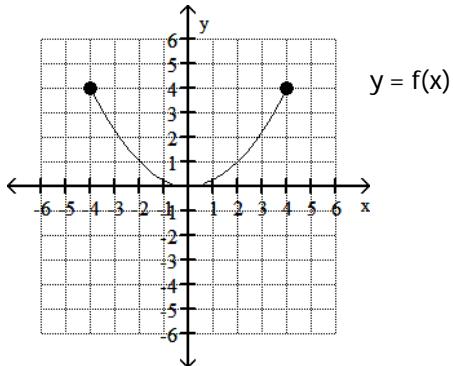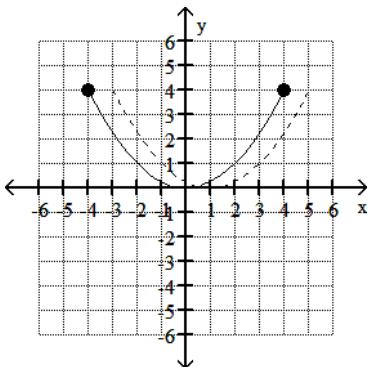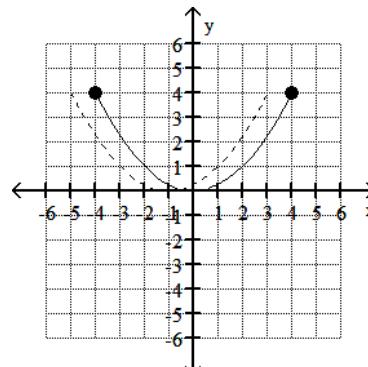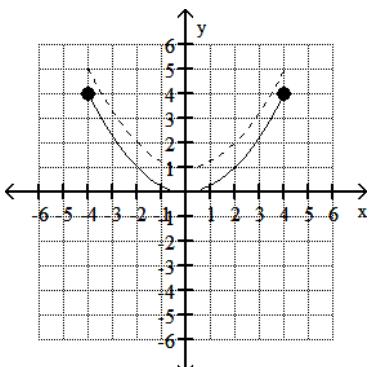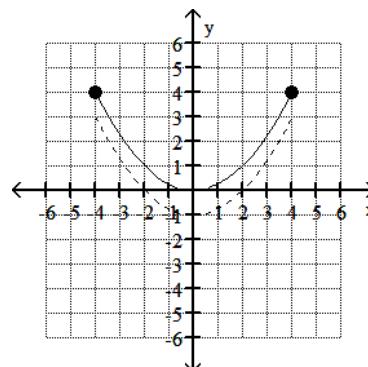
Answer: B
Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ --VIDEO 22

Find the domain of the function.

23) $f(x) = \sqrt{24 - x}$

23) _____

A) $(-\infty, 24) \cup (24, \infty)$

B) $(-\infty, 2\sqrt{6}]$

C) $(-\infty, 24]$

D) $(-\infty, 2\sqrt{6}) \cup (2\sqrt{6}, \infty)$

Answer: C
Objective: (2.6) Find the Domain of a Function

ALVAREZ--VIDEO 23

8

24) $\dfrac{x}{\sqrt{x - 2}}$ 24) _____

    A) $(2, \infty)$ B) $(-\infty, \infty)$ C) $(-\infty, 2) \cup (2, \infty)$ D) $[2, \infty)$

Answer: A

ALVAREZ VIDEO 24

Given functions f and g, perform the indicated operations.

25) $f(x) = 9x - 2, \quad g(x) = 4x - 7$ 25) _____

    Find f - g.

    A) $5x - 9$ B) $-5x - 5$ C) $5x + 5$ D) $13x - 9$

Answer: C

ALVAREZ--VIDEO 25

26) $f(x) = 3x^2 - 8x, \quad g(x) = x^2 - 5x - 24$ 26) _____

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

    A) $\dfrac{3x}{x + 1}$ B) $\dfrac{3x^2 - 8x}{x^2 - 5x - 24}$ C) $\dfrac{3 - x}{24}$ D) $\dfrac{3x - 8}{-5}$

Answer: B

ALVAREZ VIDEO 26

27) $f(x) = 9 - 2x, \quad g(x) = -4x + 2$ 27) _____

    Find f + g.

    A) $5x$ B) $-4x + 9$ C) $2x + 11$ D) $-6x + 11$

Answer: D

ALVAREZ--VIDEO 27

28) $f(x) = 3x - 6, \quad g(x) = 5x - 7$ 28) _____

    Find fg.

    A) $8x^2 - 51x - 13$ B) $15x^2 - 37x + 42$ C) $15x^2 - 51x + 42$ D) $15x^2 + 42$

Answer: C

ALVAREZ VIDEO 28

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

29) $f(x) = x^2 + 2x - 1, \quad g(x) = x^2 - 2x + 3$ 29) _____

    $(f \circ g)(-2)$

    A) 122   B) 142   C) 22   D) 2

Answer: B

ALVAREZ-- VIDEO 29

30) $f(x) = 3x + 14,$ $g(x) = 2x - 1$ 30) _____
    $(f \circ g)(x)$
        A) $6x + 27$ B) $6x + 13$ C) $6x + 11$ D) $6x + 17$

Answer: C
Objective: (2.6) Form Composite Functions

ALVAREZ--VIDEO 30

31) $f(x) = 4x^2 + 6x + 5,$ $g(x) = 6x - 7$ 31) _____
    $(g \circ f)(x)$
        A) $24x^2 + 36x + 37$ B) $24x^2 + 36x + 23$ C) $4x^2 + 36x + 23$ D) $4x^2 + 6x - 2$

Answer: B
Objective: (2.6) Form Composite Functions

ALVAREZ--VIDEO 31

Find the inverse of the one-to-one function.

32) $f(x) = \dfrac{8}{3x + 7}$ 32) _____

    A) $f^{-1}(x) = \dfrac{8}{3x} - \dfrac{7}{3}$ B) $f^{-1}(x) = \dfrac{7}{3} - \dfrac{8}{3x}$

    C) $f^{-1}(x) = \dfrac{3x + 7}{8}$ D) $f^{-1}(x) = \dfrac{8}{3y} - \dfrac{7}{3}$

Answer: A
Objective: (2.7) Find the Inverse of a Function

ALVAREZ VIDEO 32

Find the distance between the pair of points.
33) $(-1, -3)$ and $(-5, 0)$ 33) _____
        A) 5   B) 10   C) 6   D) 25

Answer: A
Objective: (2.8) Find the Distance Between Two Points

ALVAREZ--VIDEO 33

34) $(0, 0)$ and $(-1, -5)$ 34) _____
        A) $\sqrt{6}$ B) $\sqrt{26}$ C) 26   D) -6

Answer: B
Objective: (2.8) Find the Distance Between Two Points

ALVAREZ--VIDEO 34

Find the midpoint of the line segment whose end points are given.
35) $(5, 1)$ and $(3, 0)$ 35) _____
        A) $(1, \frac{1}{2})$ B) $(8, 1)$ C) $(4, \frac{1}{2})$ D) $(2, 1)$

Answer: C
Objective: (2.8) Find the Midpoint of a Line Segment

ALVAREZ--VIDEO 35

Graph the equation.

36) $x^2 + y^2 - 8x - 12y + 43 = 0$ 36) _____
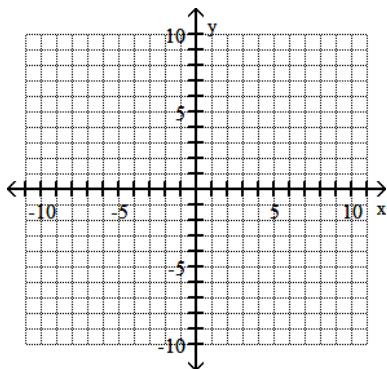
A)
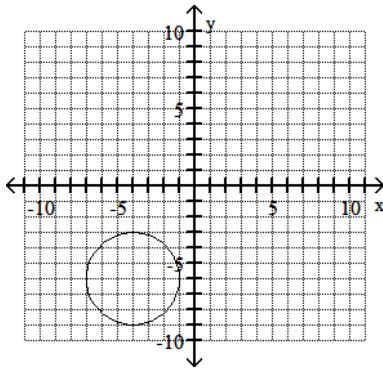
B)
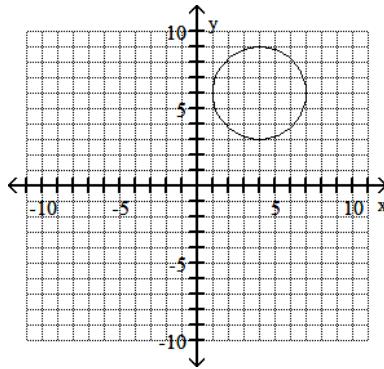
Answer: B
Objective: (2.8) Convert the General Form of a Circle's Equation to Standard Form

ALVAREZ--VIDEO 36

Use the vertex and intercepts to sketch the graph of the quadratic function.

37) $f(x) = 2(x + 6)^2 + 1$ 37) _____

A)

B)

C)

D)
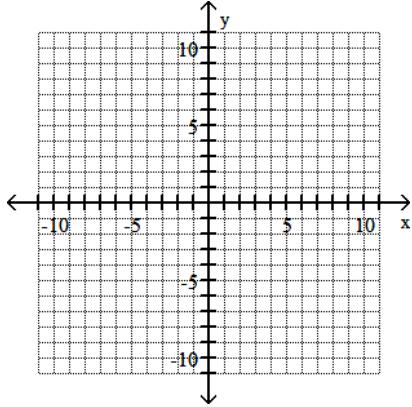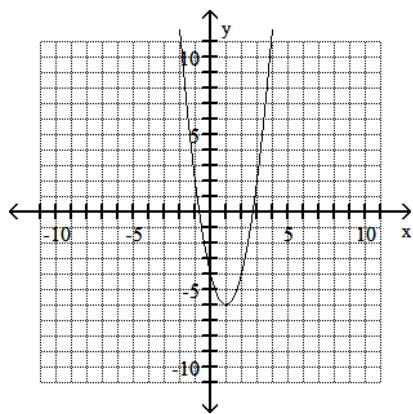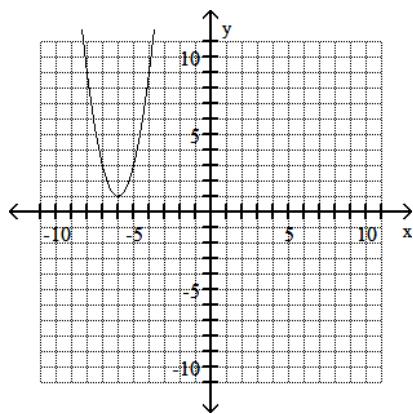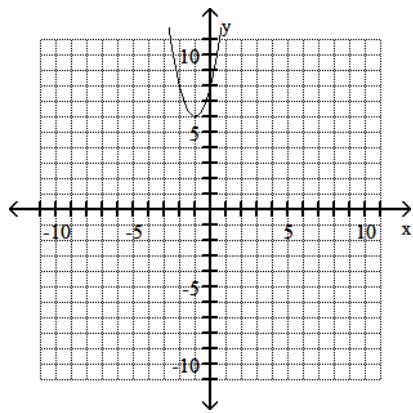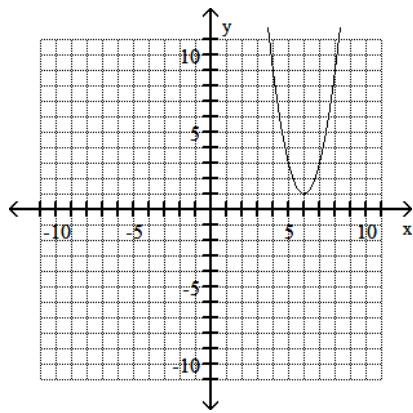
Answer: B
Objective: (3.1) Graph Parabolas

ALVAREZ--VIDEO 37

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

38) _____

A)

B)

C)

D)
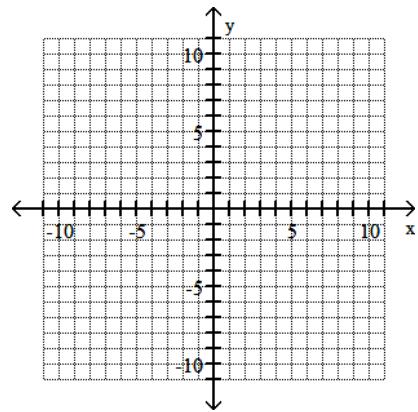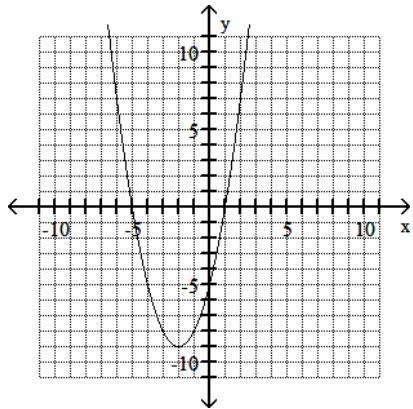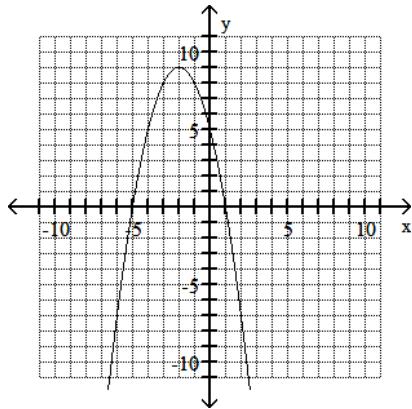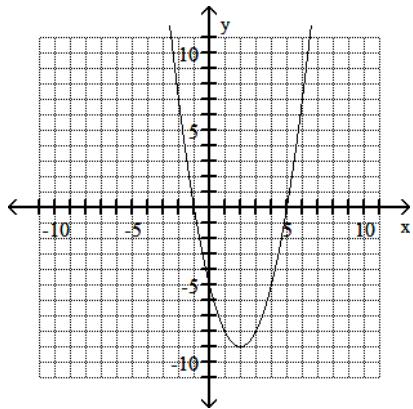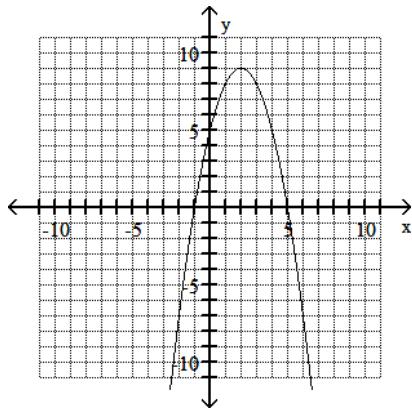
Answer: B
Objective: (3.1) Graph Parabolas

ALVAREZ--VIDEO 38

Solve the problem.

39) An arrow is fired into the air with an initial velocity of 160 feet per second. The height in feet of the arrow t seconds after it was shot into the air is given by the function $h(x) = -16t^2 + 160t$. Find the maximum height of the arrow.

39) _____

   A) 1200 ft   B) 80 ft   C) 400 ft   D) 720 ft

Answer: C
Objective: (3.1) Solve Problems Involving a Quadratic Function's Minimum or Maximum Value

ALVAREZ--VIDEO 39

Use the Leading Coefficient Test to determine the end behavior of the polynomial function. Then use this end behavior to match the function with its graph.

40) $f(x) = 3x^4 - 2x^2$

40) _____

A) falls to the left and rises to the right
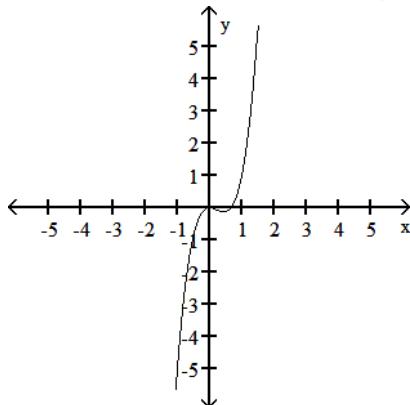
B) rises to the left and rises to the right

C) falls to the left and falls to the right
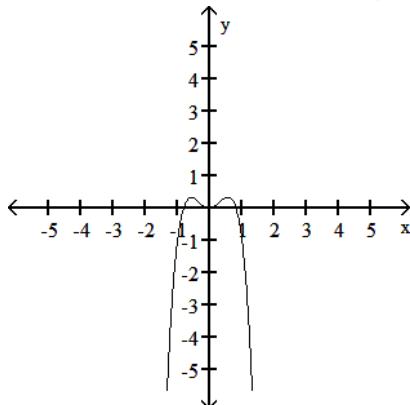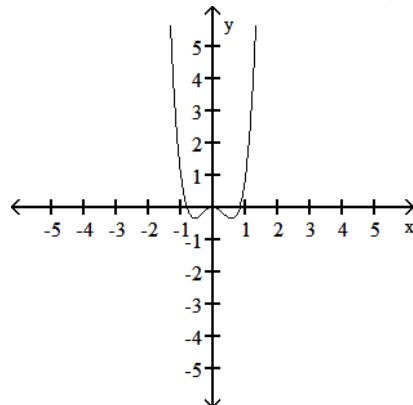
D) rises to the left and falls to the right
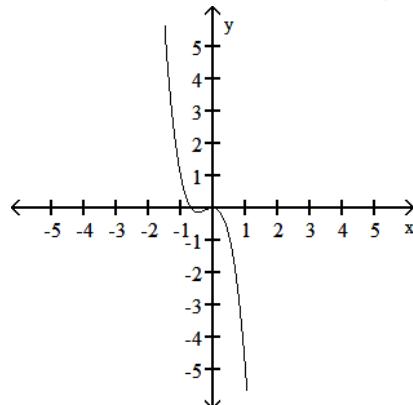
Answer: B
Objective: (3.2) Determine End Behavior

ALVAREZ VIDEO 40

Find the zeros of the polynomial function.

41) $f(x) = x^3 + x^2 - 20x$

41) _____

A) $x = 0, x = 3, x = 4$ B) $x = 3, x = 4$
C) $x = 0, x = -5, x = 4$ D) $x = -5, x = 4$

Answer: C
Objective: (3.2) Use Factoring to Find Zeros of Polynomial Functions

ALVAREZ-- VIDEO 41

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

42) _____

A) $x = -5, x = 5$ B) $x = 1, x = -5, x = 5$
C) $x = 25$ D) $x = -1, x = 1, x = -5$

Answer: D
Objective: (3.2) Use Factoring to Find Zeros of Polynomial Functions

ALVAREZ--VIDEO 42

Graph the polynomial function.

43) $f(x) = x^3 - 2x^2 - 5x + 6$

43) _____
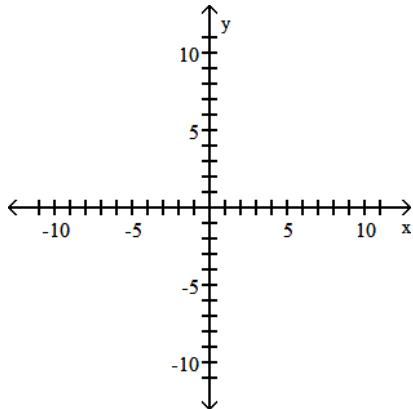
A)
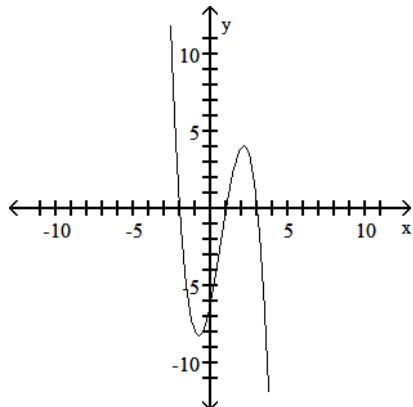
B)
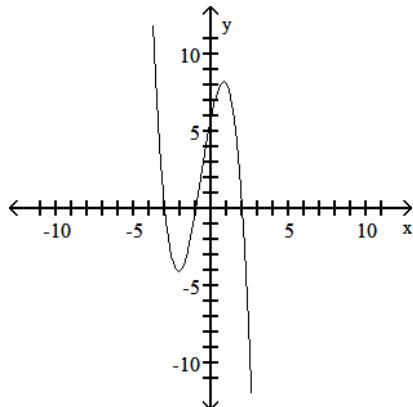
C)

D)
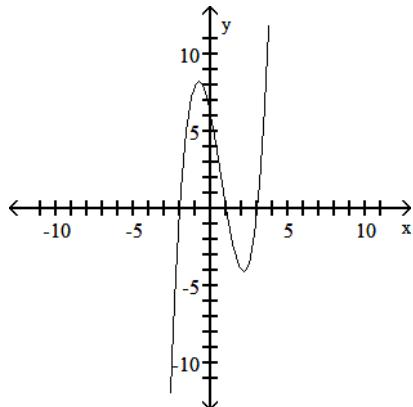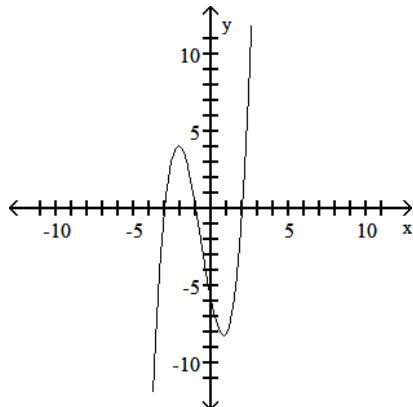
Answer: C
Objective: (3.2) Graph Polynomial Functions

ALVAREZ--VIDEO 43

Use synthetic division and the Remainder Theorem to find the indicated function value.

44) $f(x) = 4x^3 - 7x^2 - 4x + 10$; $f(-3)$

44) _____

    A) 15   B) –173   C) –149   D) –67

Answer: C
Objective: (3.3) Evaluate a Polynomial Using the Remainder Theorem

ALVAREZ-- VIDEO 44

Use synthetic division to show that the number given to the right of the equation is a solution of the equation, then solve the polynomial equation.

45) $x^3 - 2x^2 - 5x + 6 = 0$; 3

    A) {1, 2, 3}   B) {-1, 2, 3}   C) {-1, -2, 3}   D) {1, -2, 3}

45) _____

Answer: D

Objective: (3.3) Use the Factor Theorem to Solve a Polynomial Equation

ALVAREZ--VIDEO 45

Use the Rational Zero Theorem to list all possible rational zeros for the given function.

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

    A) $\pm\dfrac{1}{5}, \pm\dfrac{3}{5}, \pm 1, \pm 3$ B) $\pm\dfrac{1}{5}, \pm\dfrac{1}{3}, \pm 1, \pm 3, \pm 5$

    C) $\pm\dfrac{1}{5}, \pm\dfrac{3}{5}, \pm 1, \pm 3, \pm 5$ D) $\pm\dfrac{1}{3}, \pm\dfrac{5}{3}, \pm 1, \pm 5$

46) _____

Answer: A

Objective: (3.4) Use the Rational Zero Theorem to Find Possible Rational Zeros

ALVAREZ-- VIDEO 46

Find a rational zero of the polynomial function and use it to find all the zeros of the function.

47) $f(x) = x^3 + 8x^2 + 25x + 26$

    A) $\{2, -3 + \sqrt{2}, -6 - \sqrt{2}\}$ B) $\{-2, 2 + \sqrt{2}, 2 - \sqrt{2}\}$

    C) $\{-2, -3 + 2i, -3 - 2i\}$ D) $\{-2, 2 + 3i, 2 - 3i\}$

47) _____

Answer: C

Objective: (3.4) Find Zeros of a Polynomial Function

ALVAREZ--VIDEO 47

Solve the polynomial equation. In order to obtain the first root, use synthetic division to test the possible rational roots.

48) $x^3 + 3x^2 - 4x - 12 = 0$

    A) {-2, 2, 3}   B) {-3}   C) {-3, -2, 2}   D) {-2}

48) _____

Answer: C

Objective: (3.4) Solve Polynomial Equations

ALVAREZ--VIDEO 48

49) $x^3 + 3x^2 - 8x + 10 = 0$

    A) {-5, 5}   B) {1 + i, 1 - i, 5i}   C) {1 + i, 1 - i, 5}   D) {1 + i, 1 - i, -5}

49) _____

Answer: D

Objective: (3.4) Solve Polynomial Equations

ALVAREZ--VIDEO 49

50) $x^4 - 3x^3 + 26x^2 - 22x - 52 = 0$

    A) {1, -2, 1 + 5i, 1 - 5i}   B) $\{1, -2, 1 + \sqrt{5}, 1 - \sqrt{5}\}$

    C) {-1, 2, 1 + 5i, 1 - 5i}   D) {-1, 2, 1 + 6i, 1 - 6i}

50) _____

Answer: C

Objective: (3.4) Solve Polynomial Equations

ALVAREZ-- VIDEO 50

Find an nth degree polynomial function with real coefficients satisfying the given conditions.

51) n = 3; -1 and 2 + 3i are zeros; leading coefficient is 1

    A) $f(x) = x^3 - 3x^2 + 9x + 13$ B) $f(x) = x^3 - 3x^2 + 15x + 13$

    C) $f(x) = x^3 + 5x^2 + 9x - 14$ D) $f(x) = x^3 - 4x^2 + 9x + 13$

51) _____

Answer: A

ALVAREZ VIDEO 51

52) n = 4; 2i, 7, and -7 are zeros; leading coefficient is 1

    A) $f(x) = x^4 + 4x^2 - 196$ B) $f(x) = x^4 + 4x^2 - 7x - 196$

    C) $f(x) = x^4 - 45x^2 - 196$ D) $f(x) = x^4 + 4x^3 - 45x^2 - 196$

52) _____

Answer: C

ALVAREZ VIDEO 52

Find the domain of the rational function.

53) $h(x) = \dfrac{x + 2}{x^2 - 49}$

    A) $\{x \mid x \neq -7, x \neq 7, x \neq -2\}$ B) $\{x \mid x \neq 0, x \neq 49\}$

    C) $\{x \mid x \neq -7, x \neq 7\}$ D) all real numbers

53) _____

Answer: C

ALVAREZ VIDEO 53

Find the vertical asymptotes, if any, of the graph of the rational function.

54) $\dfrac{x - 81}{x^2 - 15x + 56}$

    A) $x = 8, x = 7$ B) $x = -8, x = -7$

    C) $x = -81$ D) $x = 8, x = 7, x = -81$

54) _____

Answer: A

ALVAREZ--VIDEO 54

Find the horizontal asymptote, if any, of the graph of the rational function.

55) $f(x) = \dfrac{25x}{5x^2 + 1}$

    A) $y = \dfrac{1}{5}$ B) $y = 0$

    C) $y = 5$ D) no horizontal asymptote

55) _____

Answer: B

ALVAREZ--VIDEO 55

56) $g(x) = \dfrac{4x^2 - 7x - 5}{7x^2 - 3x + 7}$

56) _____

    A) $y = \dfrac{7}{3}$ B) $y = 0$

    C) $y = \dfrac{4}{7}$ D) no horizontal asymptote

Answer: C

ALVAREZ--VIDEO 56

Find the slant asymptote, if any, of the graph of the rational function.

57) $f(x) = \dfrac{x^2 + 3x - 8}{x - 4}$

57) _____

    A) $y = x + 3$ B) $y = x$
    C) $y = x + 7$ D) no slant asymptote

Answer: C

ALVAREZ--VIDEO 57

Solve the rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

58) $\dfrac{x - 7}{x + 8} < 0$

58) _____

    A) $(-\infty, -8)$

    B) $(-8, 7)$

    C) $(7, \infty)$
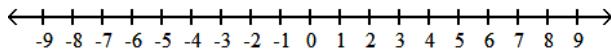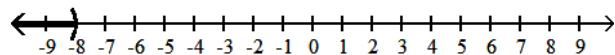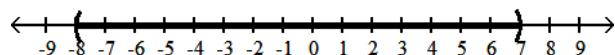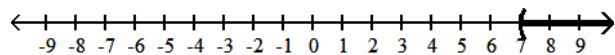
    D) $(-\infty, -8)$ or $(7, \infty)$
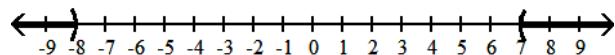
Answer: B

ALVAREZ VIDEO 58

Solve the problem.

59) The function $f(x) = 700(0.5)^{x/50}$ models the amount in pounds of a particular radioactive material stored in a concrete vault, where x is the number of years since the material was put into the vault. Find the amount of radioactive material in the vault after 130 years. Round to the nearest whole number.

    A) 910 pounds   B) 115 pounds   C) 135 pounds   D) 536 pounds

59) _____

Answer: B

Objective: (4.1) Evaluate Exponential Functions

ALVAREZ--VIDEO 59

60) The size of the bear population at a national park increases at the rate of 4.9% per year. If the size of the current population is 146, find how many bears there should be in 7 years. Use the function $f(x) = 146e^{0.049t}$ and round to the nearest whole number.

    A) 208   B) 206   C) 210   D) 204

60) _____

Answer: B

Objective: (4.1) Evaluate Functions with Base e

ALVAREZ--VIDEO 60

61) The population in a particular country is growing at the rate of 1.4% per year. If 8,911,000 people lived there in 1999, how many will there be in the year 2003? Use $f(x) = y_0 e^{0.014t}$ and round to the nearest ten-thousand.

    A) 10,370,000   B) 9,240,000   C) 9,420,000   D) 11,310,000

61) _____

Answer: C

Objective: (4.1) Evaluate Functions with Base e

ALVAREZ--VIDEO 61

62) The function $D(h) = 7e^{-0.4h}$ can be used to determine the milligrams D of a certain drug in a patient's bloodstream h hours after the drug has been given. How many milligrams (to two decimals) will be present after 9 hours?

    A) 0.19 mg   B) 0.55 mg   C) 4.69 mg   D) 256.19 mg

62) _____

Answer: A

Objective: (4.1) Evaluate Functions with Base e

ALVAREZ--VIDEO 62

Find the domain of the logarithmic function.

63) $f(x) = \ln(6 - x)$

    A) $(-\infty, 6)$ B) $(-6, \infty)$ C) $(-\infty, 0)$ D) $(-\infty, 6)$ or $(6, \infty)$

63) _____

Answer: A

Objective: (4.2) Find the Domain of a Logarithmic Function

ALVAREZ--VIDEO 63

64) $f(x) = \log(x^2 - 8x + 12)$

    A) $(-\infty, 2) \cup (6, \infty)$ B) $(-\infty, -2)$ C) $(-2, 6)$ D) $(6, \infty)$

64) _____

Answer: A

Objective: (4.2) Find the Domain of a Logarithmic Function

ALVAREZ VIDEO 64

65) $f(x) = \log\left(\dfrac{x + 8}{x - 3}\right)$

65) _____

A) $(-8, 3)$ B) $(-\infty, -8)$ C) $(-\infty, -8) \cup (3, \infty)$ D) $(3, \infty)$

Answer: C

Objective: (4.2) Find the Domain of a Logarithmic Function

ALVAREZ VIDEO 65

Use properties of logarithms to expand the logarithmic expression as much as possible. Where possible, evaluate logarithmic expressions without using a calculator.

66) $\log_a\left(\dfrac{x^4\,\sqrt[3]{x + 5}}{(x - 2)^2}\right)$

66) _____

A) $4 \log_a x + \dfrac{1}{3} \log_a (x + 5) - 2 \log_a (x - 2)$ B) $\log_a x^4 + \log_a (x + 5)^{1/3} - \log_a (x - 2)^2$

C) $\log_a x^4 + \log_a (x + 5)^{-3} - \log_a (x - 2)^2$ D) $4 \log_a x - 3 \log_a (x + 5) - 2 \log_a (x - 2)$

Answer: A
Objective: (4.3) Expand Logarithmic Expressions

ALVAREZ--VIDEO 66

67) $\log\left[\dfrac{4x^3\,\sqrt[3]{3 - x}}{5(x + 3)^2}\right]$

67) _____

A) $\log 4 + 3\log x + \dfrac{1}{3}\log (3 - x) - \log 5 + 2\log (x + 3)$

B) $\log 4 + \log x^3 + \log (3 - x)^{1/3} - \log 5 - \log (x + 3)^2$

C) $\log (4x^3\,\sqrt[3]{3 - x}) - \log (5(x + 3)^2)$

D) $\log 4 + 3\log x + \dfrac{1}{3}\log (3 - x) - \log 5 - 2\log (x + 3)$

Answer: D
Objective: (4.3) Expand Logarithmic Expressions

ALVAREZ--VIDEO 67

Use properties of logarithms to condense the logarithmic expression. Write the expression as a single logarithm whose coefficient is 1. Where possible, evaluate logarithmic expressions.

68) $3\log_b y + 6\log_b z$

68) _____

A) $9\log_b yz$ B) $18\log_b yz$ C) $\log_b (yz)^9$ D) $\log_b y^3 z^6$

Answer: D
Objective: (4.3) Condense Logarithmic Expressions

ALVAREZ VIDEO 68

Use common logarithms or natural logarithms and a calculator to evaluate to four decimal places

69) $\log_{28} 370$

69) _____

    A) 1.7747   B) 1.1210   C) 4.0154   D) 0.5635

Answer: A

ALVAREZ VIDEO 69

Solve the equation by expressing each side as a power of the same base and then equating exponents.

70) $4^{x + 10} = 8^{x - 2}$

70) _____

    A) {22}   B) {26}   C) {16}   D) {12}

Answer: B

ALVAREZ--VIDEO 70

Solve the exponential equation. Express the solution set in terms of natural logarithms.

71) $9^{5x} = 3.3$

71) _____

    A) $\left\{ \dfrac{\ln 3.3}{5 \ln 9} \right\}$ B) $\left\{ \dfrac{3.3 \ln 5}{\ln 9} \right\}$ C) $\left\{ \dfrac{\ln 3.3}{9 \ln 5} \right\}$ D) $\left\{ \dfrac{5 \ln 3.3}{\ln 9} \right\}$

Answer: A

ALVAREZ--VIDEO 71

Solve the exponential equation. Use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

72) $7e^x = 10$

72) _____

    A) 0.36   B) -0.36   C) 0.15   D) -0.15

Answer: A

ALVAREZ--VIDEO 72

73) $4^{x + 6} = 7$

73) _____

    A) -0.54   B) 1.49   C) -4.60   D) 6.71

Answer: C

ALVAREZ-- VIDEO 73

74) $e^{2x} + e^x - 6 = 0$

74) _____

    A) 0.69, 1.10   B) 0.14   C) 1.10, 0.14   D) 0.69

Answer: D

ALVAREZ-- VIDEO 74

Solve the logarithmic equation. Be sure to reject any value that is not in the domain of the original logarithmic expressions. Give the exact answer.

75) $\log_3 (x + 4) = 1$ 75) _____

    A) {-3}   B) {5}   C) {-1}   D) {7}

Answer: C
Objective: (4.4) Use the Definition of a Logarithm to Solve Logarithmic Equations

ALVAREZ-- VIDEO 75

76) $\log_4 (x - 4) + \log_4 (x - 10) = 2$ 76) _____

    A) {12, 2}   B) {12}   C) {13}   D) {2}

Answer: B
Objective: (4.4) Use the Definition of a Logarithm to Solve Logarithmic Equations

ALVAREZ--VIDEO 76

77) $\log_6 (x^2 - 5x) = 1$ 77) _____

    A) {1}   B) {-6, 1}   C) {6}   D) {6, -1}

Answer: D
Objective: (4.4) Use the Definition of a Logarithm to Solve Logarithmic Equations

ALVAREZ--VIDEO 77

78) $\log_5 (x - 1) - \log_5 (x - 3) = 1$ 78) _____

    A) $\{\frac{1}{2}\}$ B) $\{\frac{7}{2}\}$ C) $\{-\frac{7}{2}\}$ D) $\varnothing$

Answer: B
Objective: (4.4) Use the Definition of a Logarithm to Solve Logarithmic Equations

ALVAREZ VIDEO 78

79) $\log (5 + x) - \log (x - 3) = \log 5$ 79) _____

    A) {5}   B) $\left\{\frac{3}{2}\right\}$ C) $\varnothing$ D) {-5}

Answer: A
Objective: (4.4) Use the One-to-One Property of Logarithms to Solve Logarithmic Equations

ALVAREZ VIDEO 79

80) $\log x + \log (x - 1) = \log 12$ 80) _____

    A) {4, -3}   B) {-3}   C) $\left\{\frac{13}{2}\right\}$ D) {4}

Answer: D
Objective: (4.4) Use the One-to-One Property of Logarithms to Solve Logarithmic Equations

ALVAERZ--VIDEO 80

Solve the problem.

81) Find out how long it takes a $2500 investment to double if it is invested at 8% compounded   81) _____

quarterly. Round to the nearest tenth of a year. Use the formula $A = P\left(1 + \dfrac{r}{n}\right)^{nt}$.

    A) 9 years   B) 9.2 years   C) 8.6 years   D) 8.8 years

Answer: D
Objective: (4.4) Solve Applied Problems Involving Exponential and Logarithmic Equations

ALVAREZ VIDEO 81

82) The formula $A = 175e^{0.032t}$ models the population of a particular city, in thousands, t years after   82) _____
1998. When will the population of the city reach 205 thousand?
    A) 2005   B) 2006   C) 2004   D) 2003

Answer: D
Objective: (4.4) Solve Applied Problems Involving Exponential and Logarithmic Equations

    ALVAREZ--VIDEO 82

83) The function $A = A_0 e^{-0.0077x}$ models the amount in pounds of a particular radioactive material   83) _____
stored in a concrete vault, where x is the number of years since the material was put into the vault.
If 800 pounds of the material are placed in the vault, how much time will need to pass for only 504
pounds to remain?
    A) 70 years   B) 120 years   C) 60 years   D) 65 years

Answer: C
Objective: (4.4) Solve Applied Problems Involving Exponential and Logarithmic Equations

ALVAREZ--VIDEO 83

84) The population of a certain country is growing at a rate of 2.5% per year. How long will it take for   84) _____

this country's population to double? Use the formula $t = \dfrac{\ln 2}{k}$, which gives the time, t, for a

population with growth rate k, to double. (Round to the nearest whole year.)
    A) 28 years   B) 27 years   C) 29 years   D) 30 years

Answer: A
Objective: (4.4) Solve Applied Problems Involving Exponential and Logarithmic Equations

ALVAREZ--VIDEO 84

Solve.

85) The population of a particular country was 29 million in 1981; in 1991, it was 39 million. The   85) _____
exponential growth function $A = 29e^{kt}$ describes the population of this country t years after 1981.
Use the fact that 10 years after 1981 the population increased by 10 million to find k to three
decimal places.
    A) 0.030   B) 0.230   C) 0.040   D) 0.703

Answer: A
Objective: (4.5) Model Exponential Growth and Decay

    ALVAREZ-- VIDEO 85

86) The half-life of silicon-32 is 710 years. If 90 grams is present now, how much will be present in 400   86) _____
years? (Round your answer to three decimal places.)
   A) 60.904   B) 1.813   C) 86.553   D) 0

Answer: A
Objective: (4.5) Model Exponential Growth and Decay

ALVAREZ VIDEO 86

87) A fossilized leaf contains 38% of its normal amount of carbon 14. How old is the fossil (to the   87) _____
nearest year)? Use 5600 years as the half-life of carbon 14.
   A) 33,283   B) 7803   C) 3855   D) 29,335

Answer: B
Objective: (4.5) Model Exponential Growth and Decay

ALVAREZ--VIDEO 87

Solve the problem.

88) The logistic growth function $f(t) = \dfrac{320}{1 + 2.2e^{-0.26t}}$ describes the population of a species of butterflies   88) _____

t months after they are introduced to a non-threatening habitat. How many butterflies are expected
in the habitat after 16 months?
   A) 309 butterflies   B) 1600 butterflies   C) 5120 butterflies   D) 320 butterflies

Answer: A
Objective: (4.5) Use Logistic Growth Models

ALVAREZ VIDEO 88

Solve the system of equations.

89) $x + y + z = -6$ 89) _____
    $x - y + 3z = 2$
   $3x + y + z = -14$
   A) $\{(-3, -4, 1)\}$ B) $\{(-4, -3, 1)\}$ C) $\{(1, -3, -4)\}$ D) $\{(1, -4, -3)\}$

Answer: B
Objective: (5.2) Solve Systems of Linear Equations in Three Variables

ALVAREZ-VIDEO 89

Solve the system by the substitution method.

90) $x + y = 13$ 90) _____
   $y = x^2 - 14x + 49$
   A) $\{(7, 6)\}$ B) $\{(4, 9), (9, 4)\}$
   C) $\{(4, 17), (9, 4)\}$ D) $\{(-4, 17), (-9, 22)\}$

Answer: B
Objective: (5.4) Solve Nonlinear Systems By Substitution

ALVAREZ VIDEO 90

91) $x^2 + y^2 = 61$ 91) _____
   $x + y = -11$
      A) {(-5, 6), (-6, 5)}   B) {(-5, -6), (-6, -5)}
      C) {(5, -6), (6, -5)}   D) {(5, 6), (6, 5)}

Answer: B

    ALVAREZ VIDEO 91

Solve the problem.

92)   92) _____

   Let $A = \begin{bmatrix} -3 & 1 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 2 \\ 4 & -1 \end{bmatrix}$. Find $A + B$.

   A)   B)   C)   D)

   $\begin{bmatrix} 3 & -1 \\ 1 & -4 \end{bmatrix}$ $\begin{bmatrix} 3 & 4 \\ 0 & 4 \end{bmatrix}$ $\begin{bmatrix} 16 \end{bmatrix}$ $\begin{bmatrix} 3 & 3 \\ 6 & 4 \end{bmatrix}$

Answer: D

    ALVAREZ--VIDEO 92

93)   93) _____

   Let $A = \begin{bmatrix} 3 & -3 \\ -3 & 9 \\ -4 & -6 \end{bmatrix}$ and $B = \begin{bmatrix} -3 & -6 \\ 3 & 2 \\ -5 & -3 \end{bmatrix}$. Find $A + B$.

   A)   B)   C)   D)

   $\begin{bmatrix} 0 & -9 \\ 0 & 9 \\ -9 & 9 \end{bmatrix}$ $\begin{bmatrix} 0 & 9 \\ 0 & 11 \\ -9 & -9 \end{bmatrix}$ $\begin{bmatrix} 0 & -9 \\ 0 & 11 \\ -9 & -9 \end{bmatrix}$ $\begin{bmatrix} 6 & 3 \\ -6 & 7 \\ 1 & 0 \end{bmatrix}$

Answer: C

    ALVAREZ-- VIDEO 93

Find the product AB, if possible.

94)   94) _____

   $A = \begin{bmatrix} -1 & 3 \\ 3 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 0 & -2 & 7 \\ 1 & -3 & 2 \end{bmatrix}$

   A)   B)

   $\begin{bmatrix} 3 & -7 & -1 \\ 2 & -12 & 25 \end{bmatrix}$ $\begin{bmatrix} 3 & 2 \\ -7 & -12 \\ -1 & 25 \end{bmatrix}$

      C) AB is not defined.   D)

                                              $\begin{bmatrix} 0 & -6 & 21 \\ 3 & -6 & 4 \end{bmatrix}$

Answer: A

    ALVAREZ--VIDEO 94

95)

$$A = \begin{bmatrix} 3 & -2 & 1 \\ 0 & 4 & -3 \end{bmatrix}, \ B = \begin{bmatrix} 4 & 0 \\ -2 & 2 \end{bmatrix}$$

A)

$$\begin{bmatrix} 12 & 0 \\ 0 & 8 \end{bmatrix}$$

B)

$$\begin{bmatrix} 12 & -6 \\ -8 & 12 \\ 4 & -8 \end{bmatrix}$$

C) AB is not defined.

D)

$$\begin{bmatrix} 12 & -8 & 4 \\ -6 & 12 & -8 \end{bmatrix}$$

95) _____

Answer: C

ALVAREZ VIDEO 95

Use Cramer's rule to solve the system.

96) $2x + 3y = -4$
     $5x + y = -23$

A) {(-5, -2)}   B) {(-5, 2)}   C) {(-2, -5)}   D) {(2, -5)}

96) _____

Answer: B

ALVAREZ--VIDEO 96

Evaluate the determinant.

97)

$$\begin{vmatrix} 4 & 3 & 4 \\ 4 & 0 & 1 \\ -5 & 0 & 5 \end{vmatrix}$$

A) 45   B) -75   C) 75   D) -45

97) _____

Answer: B

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Find the indicated sum.

98) $\displaystyle\sum_{i=3}^{5} (i^2 + 2)$

A) 30   B) 56   C) 65   D) 18

98) _____

Answer: B

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Use the Binomial Theorem to expand the binomial and express the result in simplified form.

99) $(2x + 3)^3$ 99) _____

    A) $4x^6 + 6x^3 + 729$ B) $8x^3 + 36x^2 + 36x + 27$

    C) $8x^3 + 36x^2 + 54x + 27$ D) $4x^2 + 12x + 9$

Answer: C

Objective: (8.5) Expand a Binomial Raised to a Power

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Write the first three terms in the binomial expansion, expressing the result in simplified form.

100) $(x + 2)^{15}$ 100) _____

    A) $x^{15} + 28x^{14} + 840x^{13}$ B) $x^{15} + 30x^{14} + 420x^{13}$

    C) $x^{15} + 28x^{14} + 420x^{13}$ D) $x^{15} + 30x^{14} + 840x^{13}$

Answer: B

Objective: (8.5) Find a Particular Term in a Binomial Expansion

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