TEST 1

25 QUESTIONS MATH1314COC0 092817000 COLLEGE ALGEBRA SULL055112520 12192000

Name_____ **aafm1314185107590BB5555555555t1**

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

Solve the equation by factoring.

1) $15x^2 + 26x + 8 = 0$ 1) _____

A) $\left\{-\frac{4}{3}, -\frac{2}{5}\right\}$ B) $\left\{\frac{4}{3}, \frac{2}{5}\right\}$ C) $\left\{-\frac{4}{15}, -\frac{1}{4}\right\}$ D) $\left\{\frac{4}{3}, -\frac{2}{5}\right\}$

Objective: (1.5) Solve Quadratic Equations by Factoring

ALVAREZ VIDEO 4 S55–1,20 S54–1,20 S79–22 S67–20,22,23
SULLIVAN147–75 M90–17 M75–17 M99–1,2,3,4,5,6,9,10 M57–6 M50–3
m37–1,2 m51–1,2

Solve the equation using the quadratic formula.

2) $x^2 - 6x + 25 = 0$ 2) _____

A) {3 + 4i, 3 – 4i} B) {3 – 16i, 3 + 16i} C) {7, –1} D) {3 + 4i}

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

ALVAREZ **VIDEO 8 S55–28 S54–28 S79–34 S67–29**
SULLIVAN147–95 M90–16 M75–16 M99–8,12 M57–9 m49–2
m50–7 m102 #10
m44 #3 m37–3 m51–3

Solve the radical equation, and check all proposed solutions.

3) $\sqrt{18x + 9} = x + 5$ 3) _____

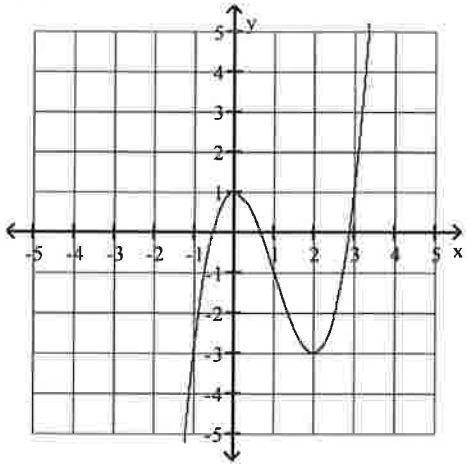
A) {–4} B) {3} C) {–3} D) {4}

Objective: (1.6) Solve Radical Equations

ALVAREZ --**VIDEO 9 S55–55 S29–29 S54–22 S79–21 S67–21**
SULLIVAN147– 49,76 M90–20 M75–20 M99–13 M57–11 m49–3
m50–9 m102 #16 m44 #4 m37–5 m51–5

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

4) $f(x) = x^3 - 3x^2 + 1$ 4) _____



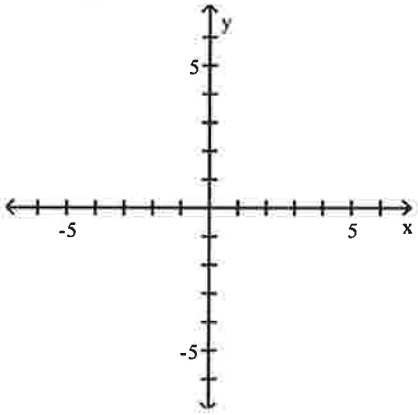
A) maximum: (0, 1); minimum: (2, -3)
B) no maximum or minimum
C) maximum: none; minimum: (2, -3)
D) maximum: (0, 1); minimum: none

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

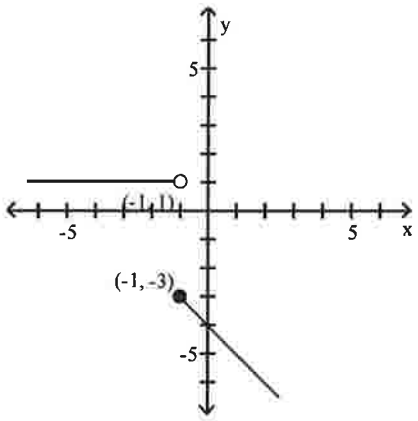
ALVAREZ--**VIDEO 15 S55–27 S54–27 S79–29,30,31,32 S67–13 SULLIVAN147–62 M90–26 M75–24 M99–18,19 M57–28 m49–5 m102 #21,22 m44 #5 m37–20 m51–7,25**

Graph the function.

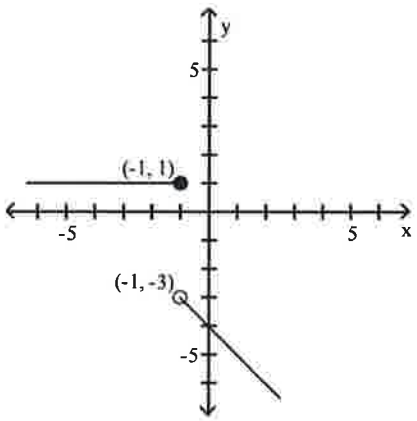
5) $f(x) = \begin{cases} x - 4 & \text{if } x < 1 \\ 1 & \text{if } x \geq 1 \end{cases}$ 5) _____



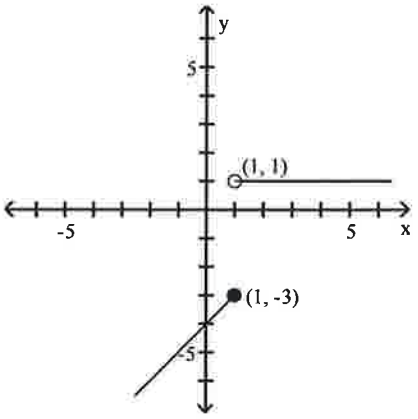
A)



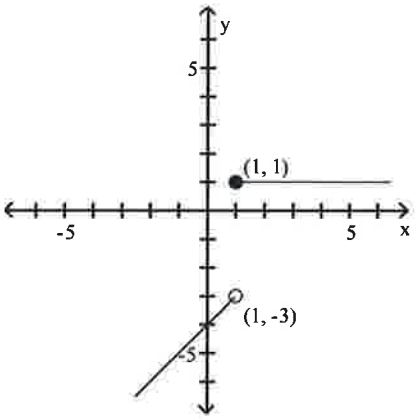
B)



C)



D)



Objective: (2.2) Understand and Use Piecewise Functions

ALVAREZ--**VIDEO 17 S55–16,17 S54–16.17 S79–14 S67–14 SULLIVAN147–63,64 M90–27 M75–25 M99–20,21,22 M57–12 m49–6 m50–10 m102 #24 m44 #5 m37–6 m51–8**

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

6) $f(x) = x^2 + 7x - 3$ 6) _____

A) $2x + h - 3$

B) $\frac{2x^2 + 2x + 2xh + h^2 + h - 6}{h}$

C) $2x + h + 7$

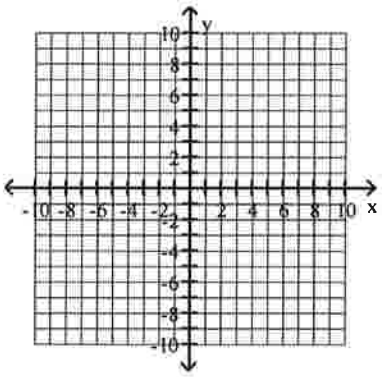
D) 1

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

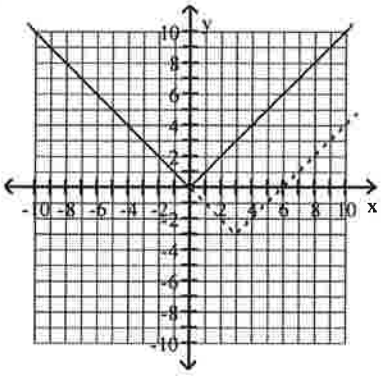
ALVAREZ--**VIDEO 18 S55–9 S54–9 S79–9 S67–9 SULLIVAN147–55 M90–28 M75–26 M99–23 M57–13 m49–7 m50–11 m102 #25 m44 #6 m37–7 m51–9**

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

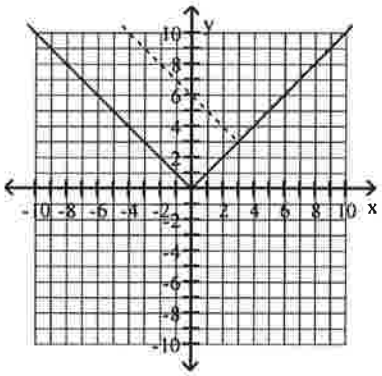
7) $h(x) = |x - 3| - 3$ 7) _____



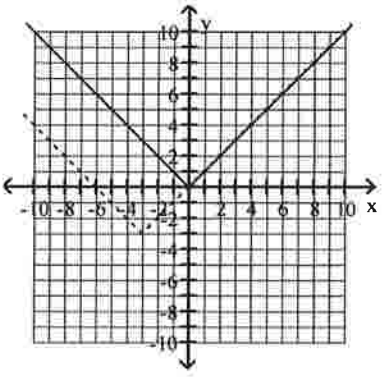
A)



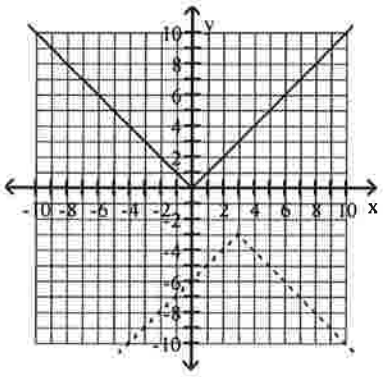
B)



C)



D)

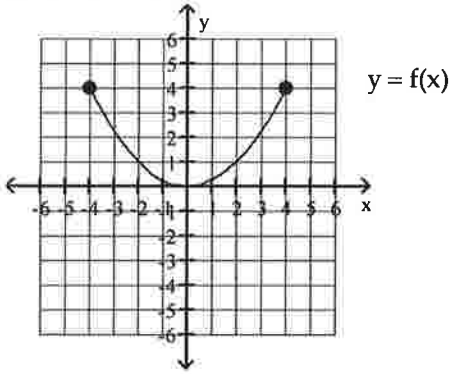


Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ--VIDEO 21 S55-19 S54-19 S79- 16 S67-16 SULLIVAN147-66 M90-36 M75-38 M99-15 M57-20 m49-10 m37-14 m51-19,20

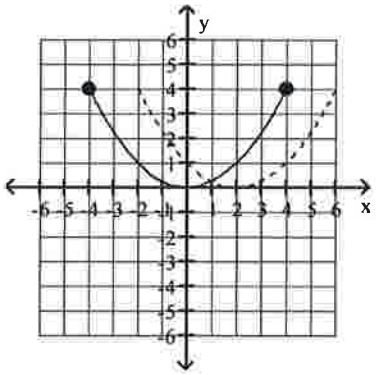
Use the graph of the function f, plotted with a solid line, to sketch the graph of the given function g.

8) g(x) = f(x + 2) 8) _____

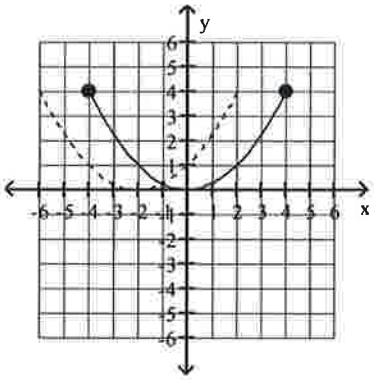


y = f(x)

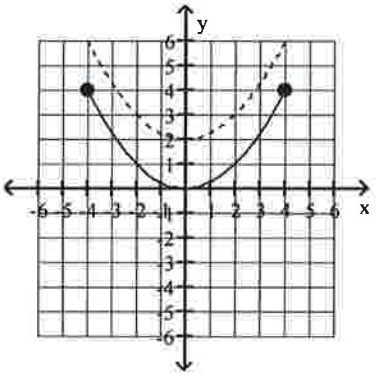
A)



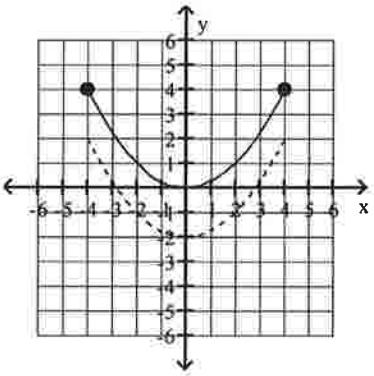
B)



C)



D)



Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ --VIDEO 22 S55–18 S54–18 S79– 15 S67– 15 SULLIVAN147–65 M90–30,32,35 M75–27 M99–26,27,28,29,30 M57–20 m102 #26 m37–14 m51–10

Find the domain of the function.

9) $f(x) = \sqrt{3 - x}$ 9) _____

A) $(-\infty, 3) \cup (3, \infty)$

B) $(-\infty, \sqrt{3}]$

C) $(-\infty, 3]$

D) $(-\infty, \sqrt{3}) \cup (\sqrt{3}, \infty)$

Objective: (2.6) Find the Domain of a Function

ALVAREZ--**VIDEO 23 S55–6 S54–6 S79–6 S67– 6 SULLIVAN147–52 M90–38 M75–28 M99–31,32 M57–14 m49–9 m50–12 m102 #30 m44 #7 m37–8 m51–11**

Given functions f and g, perform the indicated operations.

10) $f(x) = 3x + 2$, $g(x) = 2x + 8$ 10) _____

Find fg.

A) $6x^2 + 28x + 16$ B) $6x^2 + 12x + 16$ C) $5x^2 + 28x + 10$ D) $6x^2 + 16$

Objective: (2.6) Combine Functions Using the Algebra of Functions, Specifying Domains

ALVAREZ VIDEO 28 S55–7,8 S54–7,8 S79–7,8 S67–7
SULLIVAN147–53,54 M90–39 M75–29 M99–33,34 M57–15 M50–13 m37–9
m51–12

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

11) $f(x) = 3x + 11$, $g(x) = 5x - 1$ 11) _____

$(f \circ g)(x)$

A) 15x + 54 B) 15x + 10 C) 15x + 8 D) 15x + 14

Objective: (2.6) Form Composite Functions

ALVAREZ--**VIDEO 30 S55–31 S54–31 S79–37 S67–32**
SULLIVAN147–108 M90–41 M75–31 M99–35,36,37 M57–16
m49–13 m50–14
m102 #36 m44 #9 m37–10 m51–13

12) $f(x) = 4x^2 + 2x + 8$, $g(x) = 2x - 6$ 12) _____

$(g \circ f)(x)$

A) $8x^2 + 4x + 10$ B) $8x^2 + 4x + 22$ C) $4x^2 + 4x + 10$ D) $4x^2 + 2x + 2$

Objective: (2.6) Form Composite Functions

ALVAREZ VIDEO 31 S55–31 S54–31 S79–37 S67–32
SULLIVAN147–108 M90–41 M75–31 M99–35,36,37 M57–16 M49–14
M50–14 M102–35 M44–9 m37–10 m51–13

Find the distance between the pair of points.

13) (–1, –5) and (–7, 3) 13) _____

A) 10 B) 20 C) 11 D) 100

Objective: (2.8) Find the Distance Between Two Points

ALVAREZ--**VIDEO 33 S55–3 S54–3 S79–1 S67–1**
SULLIVAN147–43 M90–43 M75–33 M99–38 M57–17 m49–15
m50–15 M02 #38
m44 #10 m37–11 m51–14

Find the midpoint of the line segment whose end points are given.

14) (1, 7) and (7, 8) 14) _____

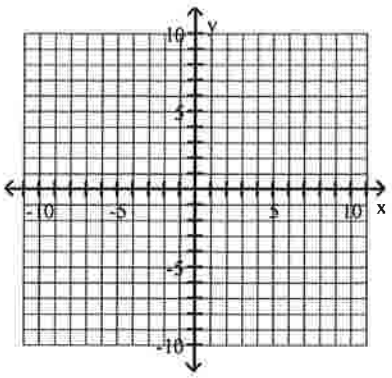
A) $(-3, -\frac{1}{2})$ B) (8, 15) C) $(4, \frac{15}{2})$ D) (–6, –1)

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

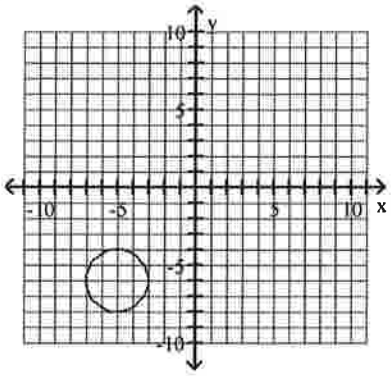
ALVAREZ--**VIDEO 35 S55–4 S54–4 S79–2 S67–2**
SULLIVAN147– 44 M90–44 M75–34 M99–39 M57–18 m49–16
m50–16 M102 #39 M44 #11 m37–12 m51–15

Graph the equation.

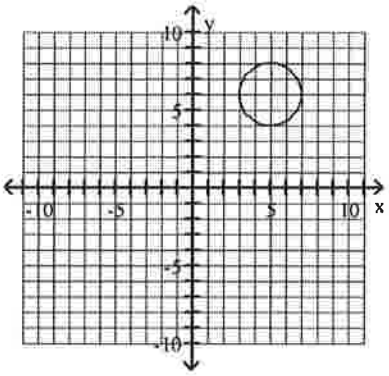
15) $x^2 + y^2 - 10x - 12y + 57 = 0$ 15) _____



A)



B)

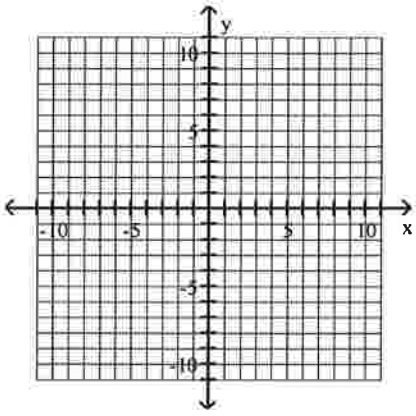


Objective: (2.8) Convert the General Form of a Circle's Equation to Standard Form

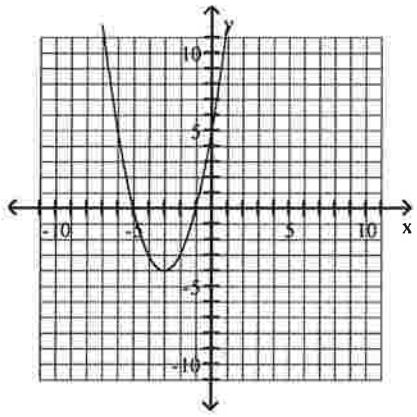
ALVAREZ--**VIDEO 36 S55–5 S54–5 S79–3 S67–3**
SULLIVAN147–48 M90–45 M75–35 M99– 40,41 M57–19 m49–17
m50–17 m102 #41 M44 #12 m37–13 m51–16

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

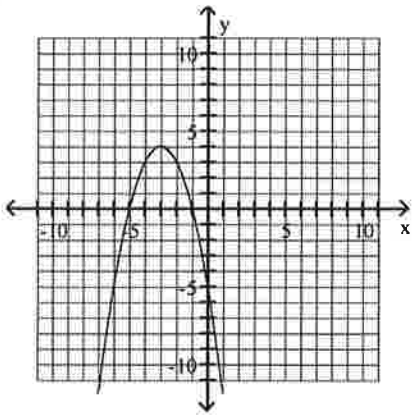
16) $f(x) = -x^2 - 6x - 5$ 16) _____



A)



B)



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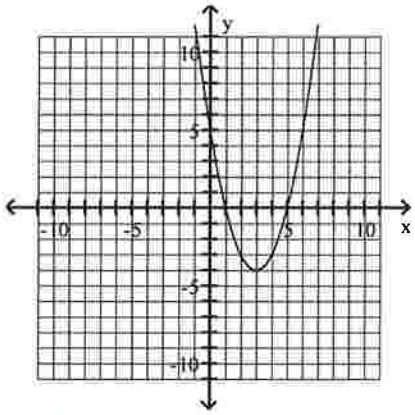
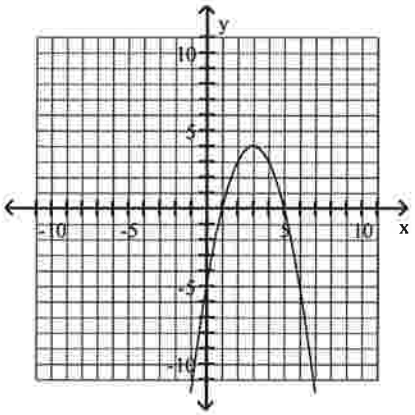


D)



Objective: (3.1) Graph Parabolas

ALVAREZ--**VIDEO 38 S55–23,24,25 S54–23,24,25 S79–24,25,26 S67–24,25 SULLIVAN147–81,82,83,85,86,87,88,89,90,91 M90–50 M75–40 M99–30,42,43,44,45,46,47,54,55 M57–22–23 m49–19 m50–20,21 m102 #43 m44 #13,14,15,16 m37–16 m51–21,22**

Solve the problem.

17) 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. 17) _____

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

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

ALVAREZ--**VIDEO 39 S55–26 S54–26 S79–28 S67–27 SULLIVAN147– 94 M90–51 M75–41 M99–43 M57–23 m49–20 m102 #44,45,46 m37–16 m51–17,18**

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

18) $x^3 + 2x^2 - 9x - 18 = 0$ 18) _____

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

Objective: (3.4) Solve Polynomial Equations

ALVAREZ--**VIDEO 48 S55–2 S54–2 S79–33 S67–28 SULLIVAN147–99,100,101 M90–55 M75–45 M99–48,49,50,51,53 M57–25 m49–21 m50–22 m102 #50 m44 #17 m37–17 m51–23,24,25**

19) $x^3 + 6x^2 - 14x + 16 = 0$ 19) _____

A) {-8, 8} B) {1 + i, 1 - i, 8i} C) {1 + i, 1 - i, 8} D) {1 + i, 1 - i, -8}

Objective: (3.4) Solve Polynomial Equations

ALVAREZ--**VIDEO 49 S55–29 S54–29 S79–35 S67–30 SULLIVAN147–99,100,101 M90–55 M75–45 M99–52 M57–26 m49–24 m50–23 m102 #54 m44 #18 m37–19 m51–23,24,25**

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

20) $\dfrac{x - 81}{x^2 - 12x + 35}$ 20) _____

A) $x = 7, x = 5$ B) $x = -7, x = -5$

C) $x = -81$ D) $x = 7, x = 5, x = -81$

Objective: (3.5) Identify Vertical Asymptotes

ALVAREZ--**VIDEO 54 S55–30 S54–30 S54–29 S79–36 S67–31 SULLIVAN147–103,104 M90–57 M75–47 M99–58,59,60,61 m49–27 m50–26 m44 #21 m37–22 m51–27,28**

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

21) $g(x) = \dfrac{9x^2 - 3x - 7}{6x^2 - 8x + 7}$ 21) _____

A) $y = \dfrac{3}{8}$ B) $y = 0$

C) $y = \dfrac{3}{2}$ D) no horizontal asymptote

Objective: (3.5) Identify Horizontal Asymptotes

ALVAREZ--**VIDEO 56 S55–30 S54–30 S79–36 S67–31 SULLIVAN147–103,104 M90–60 M75–50 M99–56,62,63,64,65 M57–33 m49–29 m50–28 m44 #23 m37–24 m51–29,30**

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

22) $f(x) = \frac{x^2 + 8x - 8}{x - 8}$ 22) _____

A) $y = x + 8$ B) $y = x$
C) $y = x + 16$ D) no slant asymptote

Objective: (3.5) Identify Slant Asymptotes

ALVAREZ--**VIDEO 57 M90–61 A ONLY M75–51 A ONLY M99–57 M57–30 m49–30 m50–25 m44 #20 m37–21 m51–26**

Solve the problem.

23) The size of the bear population at a national park increases at the rate of 4.8% per year. If the size of the current population is 188, find how many bears there should be in 8 years. Use the function $f(x) = 188e^{0.048t}$ and round to the nearest whole number. 23) _____

A) 278 B) 276 C) 280 D) 274

Objective: (4.1) Evaluate Functions with Base e

ALVAREZ--**VIDEO 60 S55–35 S54–35 S79–43 S67–38 SULLIVAN147–117 M90–80 M75–68 M99–87 M57–46 m50–29 m102 #60 m51–44**

24) The function $D(h) = 9e^{-0.4h}$ 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 10 hours? 24) _____

A) 0.16 mg B) 0.27 mg C) 5.80 mg D) 491.38 mg

Objective: (4.1) Evaluate Functions with Base e

ALVAREZ--**VIDEO 62 S55–35 S54–35 S79–43 S67–38 SULLIVAN147–117 M90–80 M75–68 M99–87 M57–46 m50–29 m102 #60 m51–44**

Find the domain of the logarithmic function.

25) $f(x) = \ln(4 - x)$ 25) _____

A) $(-\infty, 4)$ B) $(-4; \infty)$ C) $(-\infty, 0)$ D) $(-\infty, 4)$ or $(4, \infty)$

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

ALVAREZ--**VIDEO 63 S55–36 S54–36 S79–44,46,47,53 S67–39,41,47a SULLIVAN147–118 M90–64 M75–54 M99–66 M57–35 m49–31 m50–30 m102 #61 m44 #24 m37–25 m51–31**

Answer Key
Testname: AAFM1314SULL055T1SU

1) A
2) A
3) D
4) A
5) D
6) C
7) A
8) B
9) C
10) A
11) C
12) A
13) A
14) C
15) B
16) B
17) C
18) C
19) D
20) A
21) C
22) C
23) B
24) A
25) A