

Name _____ atfm1314bli2810

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

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) $\left\{\frac{4}{3}, -\frac{2}{5}\right\}$

1) _____

Objective: (1.5) Solve Quadratic Equations by Factoring

ALVAREZ VIDEO 4 M50-3,4,5,8 M44-1,2 M102 5,9,11,12

Solve the equation using the quadratic formula.

2) $x^2 + 14x + 58 = 0$

A) $\{-7 + 3i, -7 - 3i\}$

B) $\{-7 - 9i, -7 + 9i\}$

C) $\{-7 + 3i\}$

D) $\{-4, -10\}$

2) _____

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

ALVAREZ VIDEO 8 M50-7

Solve the radical equation, and check all proposed solutions.

3) $\sqrt{30x + 15} = x + 8$

A) $\{-7\}$

B) $\{8\}$

C) $\{-6\}$

D) $\{7\}$

3) _____

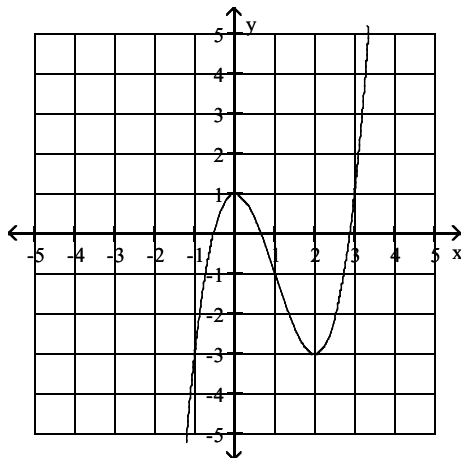
Objective: (1.6) Solve Radical Equations

ALVAREZ VIDEO 9 m49-3 m50-9 math102 #16 math44 #4

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) maximum: (0, 1); minimum: none

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

D) no maximum or minimum

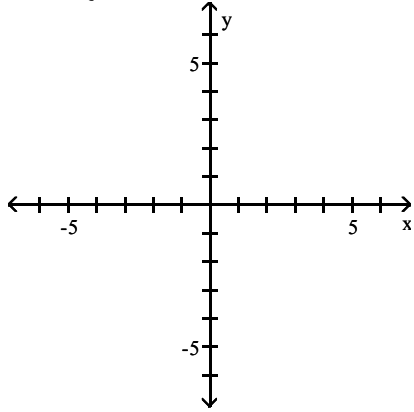
Objective: (2.2) Use Graphs to Locate Relative Maxima or Minima

ALVAREZ VIDEO 15 M49-5 M102-21,22

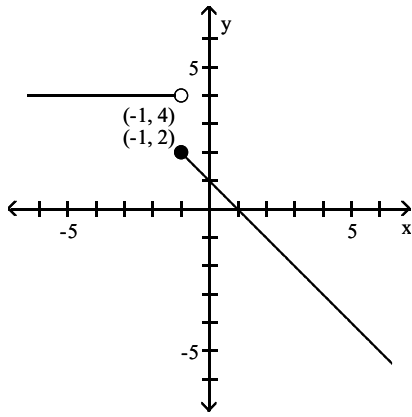
Graph the function.

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

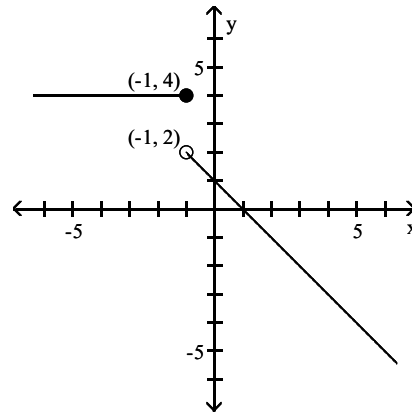
5) _____



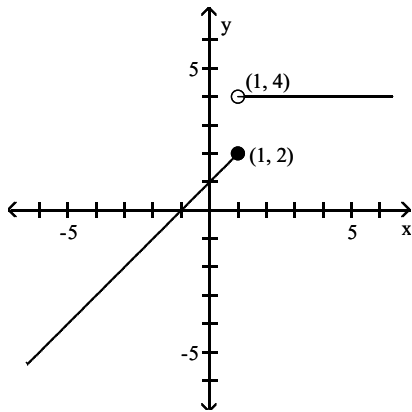
A)



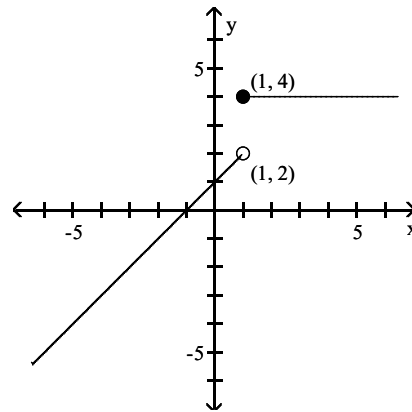
B)



C)



D)



Objective: (2.2) Understand and Use Piecewise Functions

ALVAREZ VIDEO 17 m49-6 m50-10 math102 #24 math44 #5

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

6) $f(x) = x^2 + 5x + 6$

6) _____

A) $2x + h + 6$

B) $\frac{2x^2 + 2x + 2xh + h^2 + h + 12}{h}$

C) $2x + h + 5$

D) 1

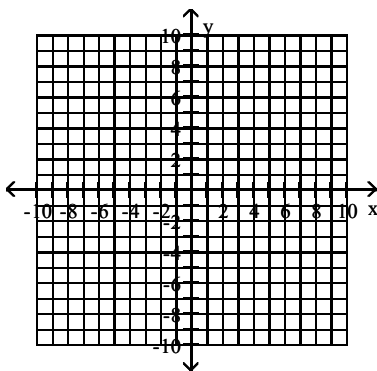
Objective: (2.2) Find and Simplify a Function's Difference Quotient

ALVAREZ VIDEO 18 m49-7 m50-11 math102 #25 math44 #6

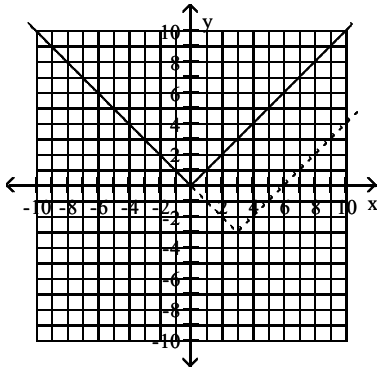
Begin by graphing the standard absolute value function $f(x) = |x|$. Then use transformations of this graph to graph the given function.

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

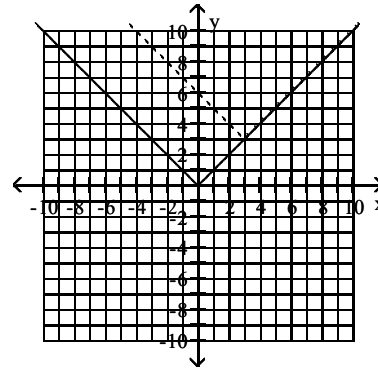
7) _____



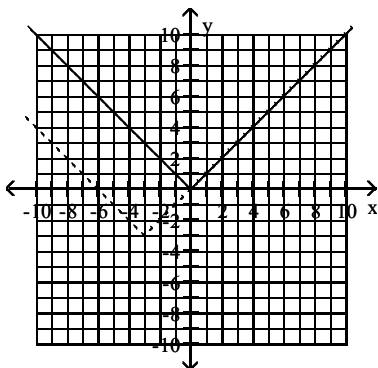
A)



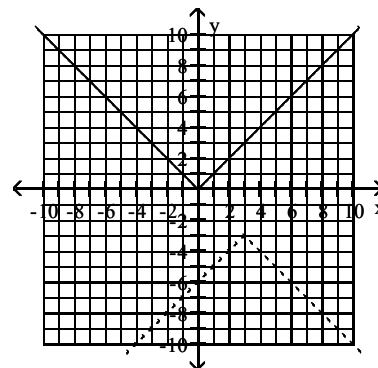
B)



C)



D)



Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ VIDEO 21 m49-8

Find the domain of the function.

8) $f(x) = \sqrt{18 - x}$

A) $(-\infty, 18) \cup (18, \infty)$

C) $(-\infty, 18]$

B) $(-\infty, 3\sqrt{2}]$

D) $(-\infty, 3\sqrt{2}) \cup (3\sqrt{2}, \infty)$

8) _____

Objective: (2.6) Find the Domain of a Function

ALVAREZ VIDEO 23 m49-9 m50-12 math102 #30 math44 #7

Given functions f and g, perform the indicated operations.

9) $f(x) = 2x - 6$, $g(x) = 9x - 8$

Find $f - g$.

A) $-7x + 2$

B) $-7x - 14$

C) $11x - 14$

D) $7x - 2$

9) _____

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

VIDEO ALVAREZ 25 M50-13 M49-10 M102-31 M44-8

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

Find fg .

A) $6x^2 + 28x + 16$

B) $6x^2 + 12x + 16$

C) $5x^2 + 28x + 10$

D) $6x^2 + 16$

10) _____

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

ALVAREZ VIDEO 28 M50-13

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

11) $f(x) = 4x^2 + 3x + 6$, $g(x) = 3x - 4$

$(g \circ f)(x)$

A) $12x^2 + 9x + 22$

B) $12x^2 + 9x + 14$

C) $4x^2 + 9x + 14$

D) $4x^2 + 3x + 2$

11) _____

Objective: (2.6) Form Composite Functions

ALVAREZ VIDEO 31 m49-14 m50-14 math102 #35 math44 #9

Find the distance between the pair of points.

12) $(-1, -3)$ and $(-7, 5)$

A) 10

B) 20

C) 11

D) 100

12) _____

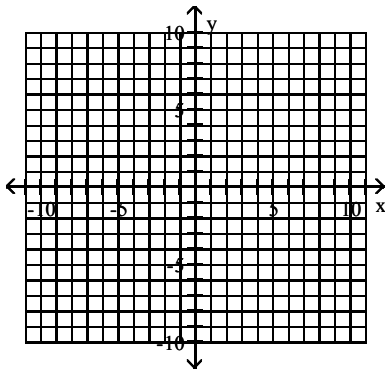
Objective: (2.8) Find the Distance Between Two Points

ALVAREZ VIDEO 33 m49-15 m50-15 math102 #38 math44 #10

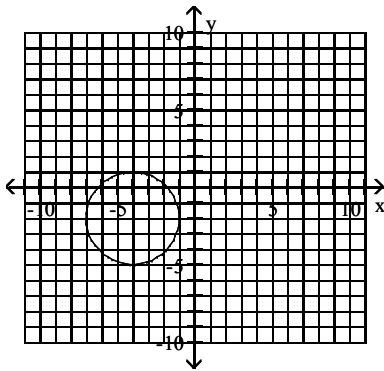
Graph the equation.

13) $x^2 + y^2 - 8x - 4y + 11 = 0$

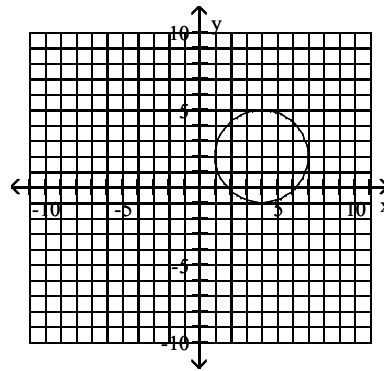
13) _____



A)



B)



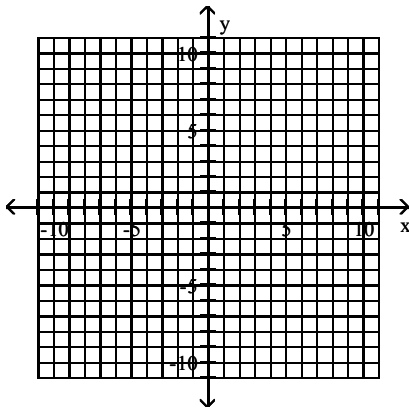
Objective: (2.8) Convert the General Form of a Circle's Equation to Standard Form

ALVAREZ VIDEO 36 m49-17 m50-17 math102 #41 m,ath44 #12

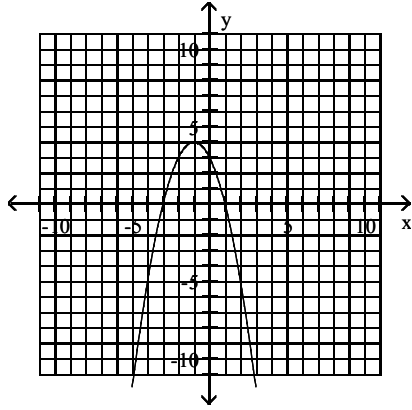
Use the vertex and intercepts to sketch the graph of the quadratic function.

14) $f(x) = -x^2 - 2x + 3$

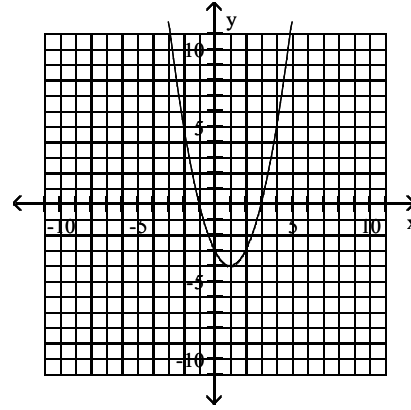
14) _____



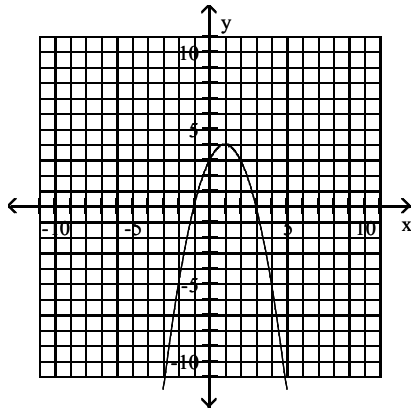
A)



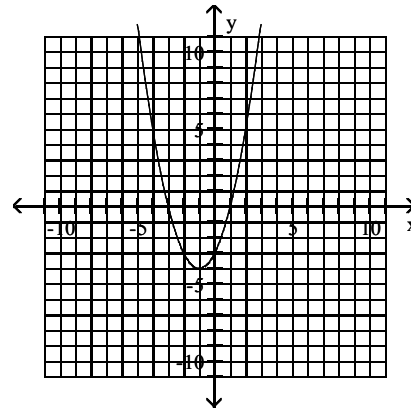
B)



C)



D)



Objective: (3.1) Graph Parabolas

ALVAREZ VIDEO 38 M50-20 M49-19 M102-43 M44-13,14,15,16

Solve the problem.

15) 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. 15) _____

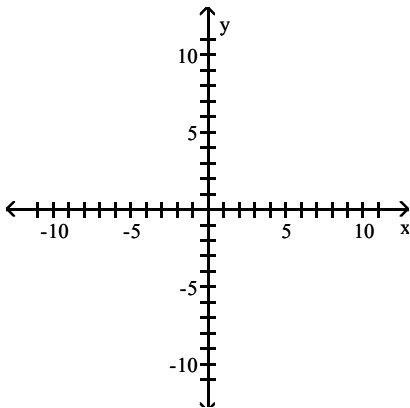
- A) 1200 ft B) 80 ft C) 400 ft D) 720 ft

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

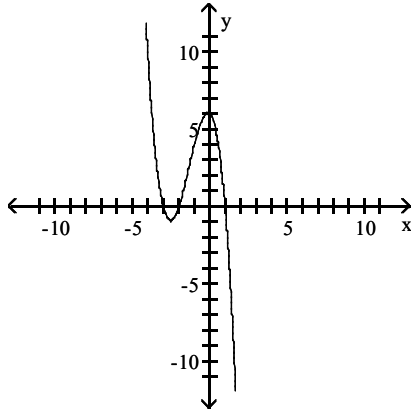
ALVAREZ VIDEO 39 m49-20 math102 #44,45,46

Graph the polynomial function.

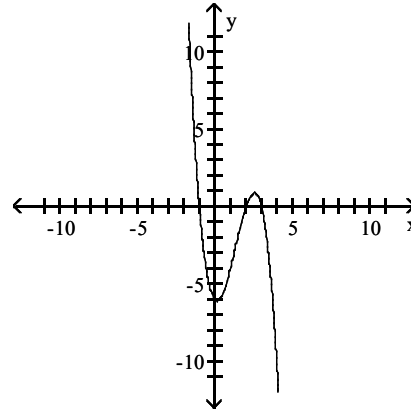
16) $f(x) = x^3 + 4x^2 + x - 6$ 16) _____



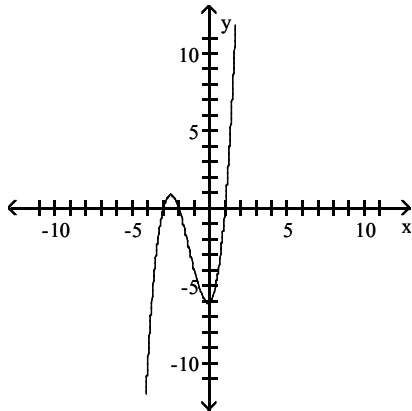
A)



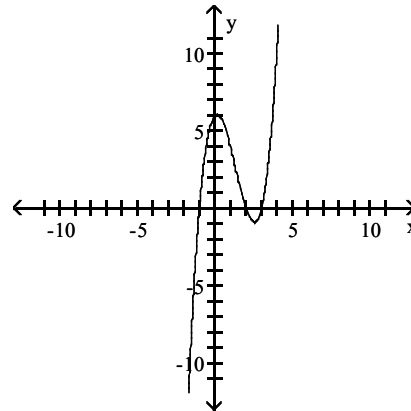
B)



C)



D)



Objective: (3.2) Graph Polynomial Functions

ALVAREZ VIDEO 43 m49-22 m50-23 math102 #50 math44 #18

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

17) $x^3 + 8x^2 - 18x + 20 = 0$

A) $\{-10, 10\}$

B) $\{1 + i, 1 - i, 10i\}$

C) $\{1 + i, 1 - i, 10\}$

D) $\{1 + i, 1 - i, -10\}$

17) _____

Objective: (3.4) Solve Polynomial Equations

ALVAREZ VIDEO 49 m49-24 m50-22 m102-50 m44-17

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

18) $\frac{x - 49}{x^2 - 7x + 10}$

A) $x = 2, x = 5$

B) $x = -2, x = -5$

C) $x = -49$

D) $x = 2, x = 5, x = -49$

18) _____

Objective: (3.5) Identify Vertical Asymptotes

ALVAREZ VIDEO 54 m49-27 m50-26 math102 #56 math44 #21

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

$$19) f(x) = \frac{x^2 + 6x - 5}{x - 4}$$

19) _____

A) $y = x + 6$

B) $y = x$

C) $y = x + 10$

D) no slant asymptote

Objective: (3.5) Identify Slant Asymptotes

ALVAREZ VIDEO 57 m49-30 m50-25 math102 #58 math44 #20

Find the domain of the logarithmic function.

$$20) f(x) = \ln(8 - x)$$

20) _____

A) $(-\infty, 8)$

B) $(-8, \infty)$

C) $(-\infty, 0)$

D) $(-\infty, 8)$ or $(8, \infty)$

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

ALVAREZ VIDEO 63 m49-31 m50-30 math102 #61 math44 #24

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

$$21) \log \left[\frac{4x^4 \sqrt[3]{5-x}}{6(x+5)^2} \right]$$

21) _____

A) $\log 4 + 4\log x + \frac{1}{3}\log(5-x) - \log 6 + 2\log(x+5)$

B) $\log 4 + \log x^4 + \log(5-x)^{1/3} - \log 6 - \log(x+5)^2$

C) $\log(4x^4 \sqrt[3]{5-x}) - \log(6(x+5)^2)$

D) $\log 4 + 4\log x + \frac{1}{3}\log(5-x) - \log 6 - 2\log(x+5)$

Objective: (4.3) Expand Logarithmic Expressions

ALVAREZ VIDEO 67 m49-32 m50-31,32 m102-62,63,64 m44-25,26 #62,63,64 math44 25,26

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

$$22) 16^x + 7 = 64^x - 10$$

22) _____

A) {24}

B) {44}

C) {37}

D) {17}

Objective: (4.4) Use Like Bases to Solve Exponential Equations

ALVAREZ VIDEO 70 m49-33 m50-33 math102 #65 math44 #27

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

$$23) 3^{x+6} = 8$$

23) _____

A) -4.11

B) 6.53

C) 1.31

D) -0.35

Objective: (4.4) Use Logarithms to Solve Exponential Equations

ALVAREZ VIDEO 73 M50-34 M44-28 M49-36

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.

24) $\log_4(x - 1) + \log_4(x - 7) = 2$ 24) _____

- A) {9, -1} B) {9} C) {10} D) {-1}

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

ALVAREZ VIDEO 76 m49-37 m50-35 math102 #75 math44 #30

25) $\log_4(x + 2) - \log_4 x = 2$ 25) _____

- A) $\{\frac{2}{15}\}$ B) {4} C) $\{\frac{1}{8}\}$ D) $\{\frac{15}{2}\}$

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

ALVAREZ VIDEO 78 M50-37

26) $\log(4 + x) - \log(x - 4) = \log 3$ 26) _____

- A) {8} B) $\{\frac{3}{2}\}$ C) {-8} D) \emptyset

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

ALVAREZ VIDEO 79 M50-37

27) $\ln x + \ln(x - 1) = \ln 72$ 27) _____

- A) {9, -8} B) {-8} C) $\{\frac{73}{2}\}$ D) {9}

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

ALVAREZLAB EXPONENZ (3,4) INTERACTMATH SEC 4.4 EXE 85

ALVAERZ VIDEO 80 m49-40,41 m50-36,37,38 math102 #81 math44 #32

Solve the problem.

28) Find out how long it takes a \$3100 investment to double if it is invested at 8% compounded 28) _____

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

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

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

ALVAREZ VIDEO 81 M50-39

29) The function $A = A_0e^{-0.00866x}$ models the amount in pounds of a particular radioactive material 29) _____

stored in a concrete vault, where x is the number of years since the material was put into the vault. If 900 pounds of the material are placed in the vault, how much time will need to pass for only 159 pounds to remain?

- A) 200 years B) 205 years C) 210 years D) 400 years

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

ALVAREZ VIDEO 83 M50-40,42 M49-43 M44-34

30) The population of a certain country is growing at a rate of 2.1% per year. How long will it take for 30) _____

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

population with growth rate k , to double. (Round to the nearest whole year.)

- A) 33 years B) 32 years C) 34 years D) 35 years

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

ALVAREZ VIDEO 84 m49-44 m50-43 math102 #72 math44 #37

Solve the system of equations.

31) $x + y + z = 2$

$x - y + 2z = -1$

$2x + y + z = 1$

A) $\{(2, -1, 1)\}$

B) $\{(-1, 2, 1)\}$

C) $\{(1, 2, -1)\}$

D) $\{(1, -1, 2)\}$

31) _____

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

ALVAREZ VIDEO 89 m49-46 m50-44 math102 #91 math44 #38

Find the indicated sum.

32) $\sum_{i=3}^5 (i^2 + 6)$

A) 42

B) 68

C) 85

D) 30

32) _____

Objective: (8.1) Use Summation Notation

ALVAREZ VIDEO 98 m49-47 m50-45 math102 #96 math44 #39

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

33) $(x + 2)^{16}$

A) $x^{16} + 30x^{15} + 960x^{14}$

B) $x^{16} + 32x^{15} + 480x^{14}$

C) $x^{16} + 30x^{15} + 480x^{14}$

D) $x^{16} + 32x^{15} + 960x^{14}$

33) _____

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

ALVAREZ VIDEO 100 m49-49 m50-49 math102 #100,101 math44 #40

Answer Key

Testname: AAT4M1314BLIF10281033

- 1) A
- 2) A
- 3) D
- 4) A
- 5) D
- 6) C
- 7) A
- 8) C
- 9) A
- 10) A
- 11) B
- 12) A
- 13) B
- 14) A
- 15) C
- 16) C
- 17) D
- 18) A
- 19) C
- 20) A
- 21) D
- 22) B
- 23) A
- 24) B
- 25) A
- 26) A
- 27) D
- 28) A
- 29) A
- 30) A
- 31) B
- 32) B
- 33) B