

Name _____ atfm1314bli2016100FIN2919

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VIDEOS (ON DEMAND 29 FINAL M1314 REVIEW)

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

A) $\left\{-\frac{5}{12}, -\frac{1}{5}\right\}$

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

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

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

1) _____

Answer: D

Objective: (1.5) Solve Quadratic Equations by Factoring

ALVAREZ VIDEO 4 S79-22

Solve the radical equation, and check all proposed solutions.

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

A) {-5}

B) {3}

C) {-4}

D) {5}

2) _____

Answer: D

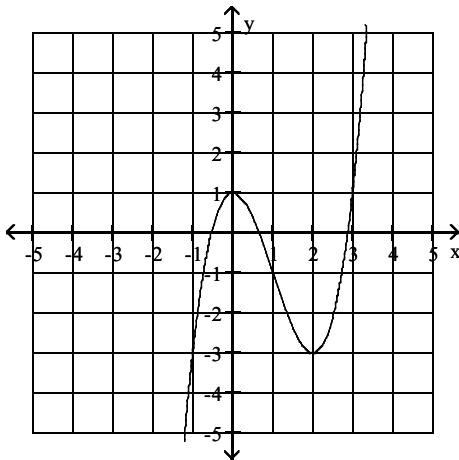
Objective: (1.6) Solve Radical Equations

ALVAREZ --VIDEO 9 S79-21

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

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

3) _____



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

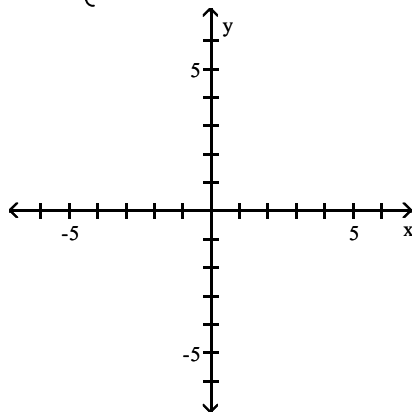
Objective: (2.2) Use Graphs to Locate Relative Maxima or Minima

ALVAREZ--VIDEO 15 S79-29,30,31,32

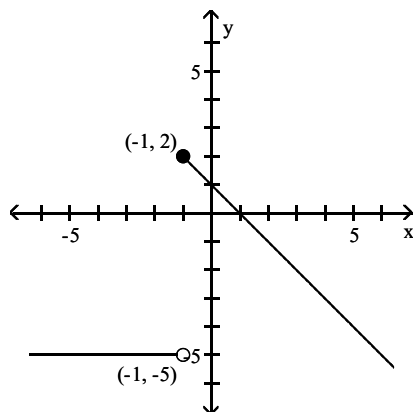
Graph the function.

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

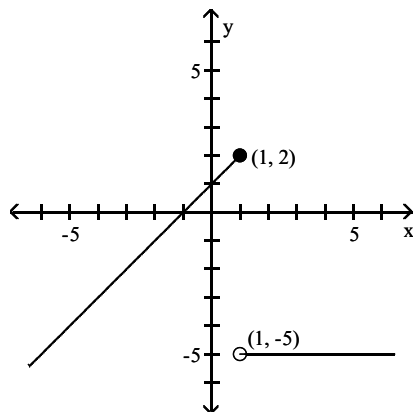
4) _____



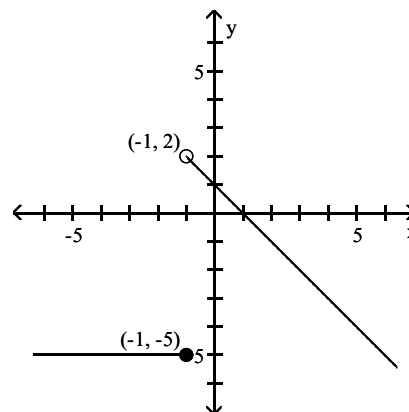
A)



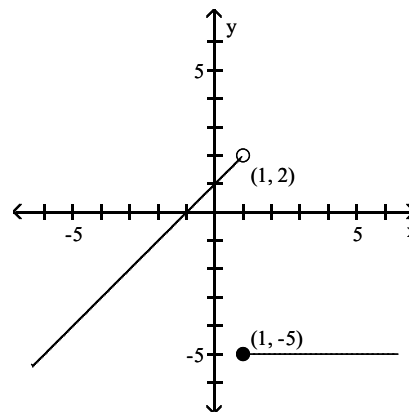
C)



B)



D)



Answer: D

Objective: (2.2) Understand and Use Piecewise Functions

ALVAREZ--VIDEO 17 S79-14

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

5) $f(x) = x^2 + 9x - 2$

5) _____

A) $2x + h - 2$

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

C) $2x + h + 9$

D) 1

Answer: C

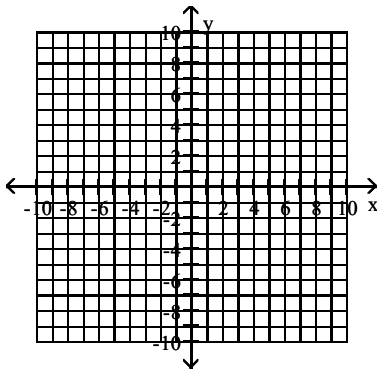
Objective: (2.2) Find and Simplify a Function's Difference Quotient

ALVAREZ-- VIDEO 18 S79-9

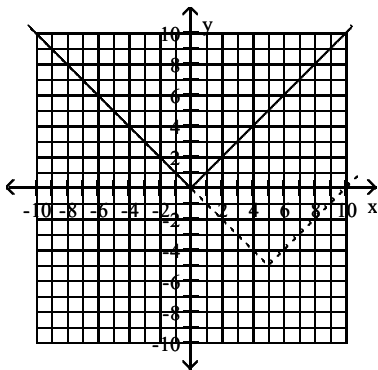
Begin by graphing the standard absolute value function $f(x) = |x|$. Then use transformations of this graph to graph the given function.

6) $h(x) = |x - 5| - 5$

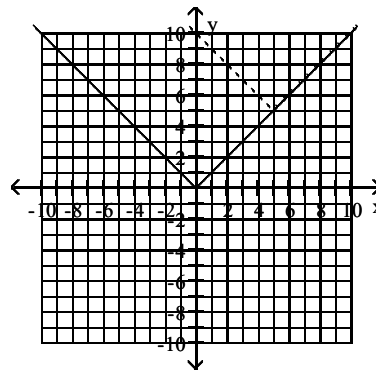
6) _____



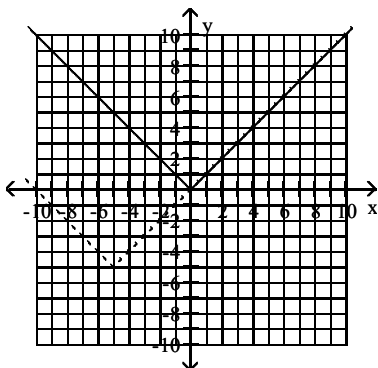
A)



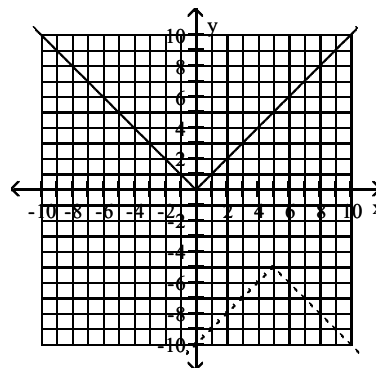
B)



C)



D)



Answer: A

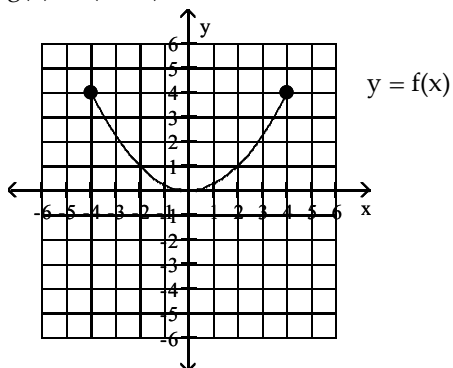
Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ--VIDEO 21 S79-16

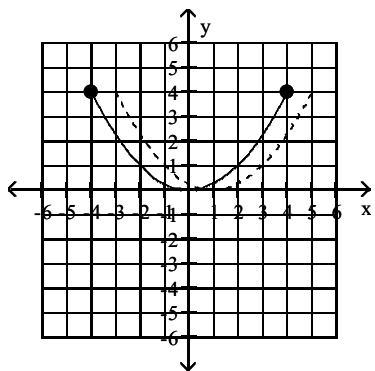
Use the graph of the function f , plotted with a solid line, to sketch the graph of the given function g .

7) $g(x) = f(x + 1)$

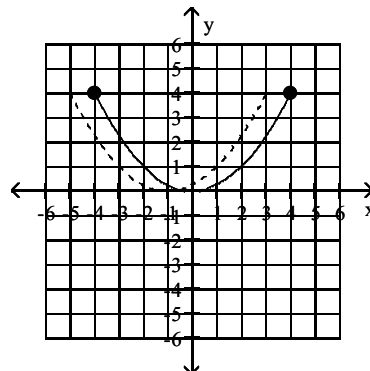
7) _____



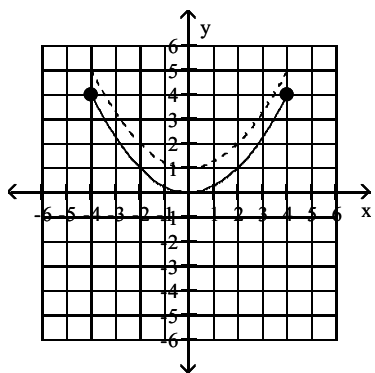
A)



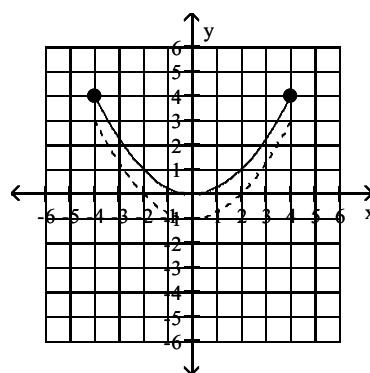
B)



C)



D)



Answer: B

Objective: (2.5) Use Horizontal Shifts to Graph Functions

ALVAREZ --VIDEO 22 S79-15

Find the domain of the function.

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

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

C) $(-\infty, 24]$

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

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

8) _____

Answer: C

Objective: (2.6) Find the Domain of a Function

ALVAREZ--VIDEO 23 S79-6

Given functions f and g , perform the indicated operations.

9) $f(x) = 9x - 2$, $g(x) = 4x - 7$

Find $f - g$.

A) $5x - 9$

B) $-5x - 5$

C) $5x + 5$

D) $13x - 9$

9) _____

Answer: C

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

ALVAREZ--VIDEO 25 S79-7,8

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

10) $f(x) = 3x + 14$, $g(x) = 2x - 1$

$(f \circ g)(x)$

A) $6x + 27$

B) $6x + 13$

C) $6x + 11$

D) $6x + 17$

10) _____

Answer: C

Objective: (2.6) Form Composite Functions

ALVAREZ--VIDEO 30 S79-37

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

11) $f(x) = \frac{8}{3x + 7}$

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

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

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

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

11) _____

Answer: A

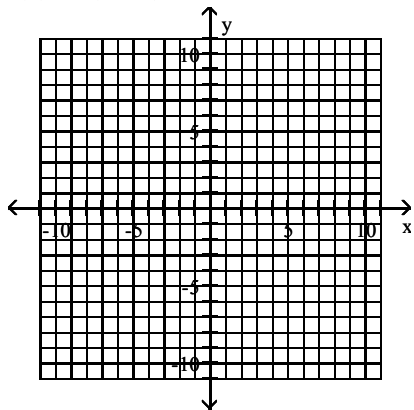
Objective: (2.7) Find the Inverse of a Function

ALVAREZ VIDEO 32 S79-38

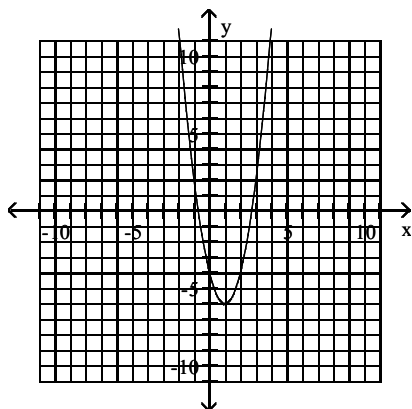
Use the vertex and intercepts to sketch the graph of the quadratic function.

12) $f(x) = 2(x + 6)^2 + 1$

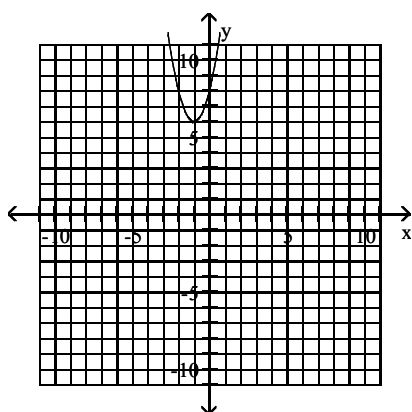
12) _____



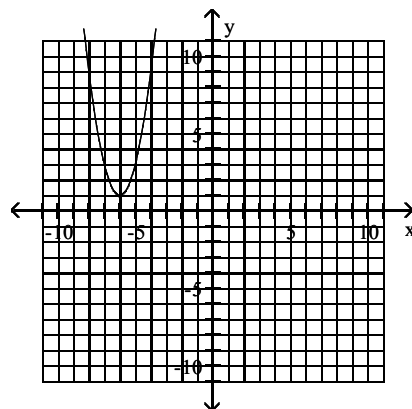
A)



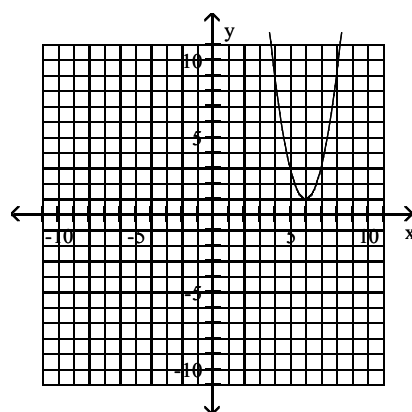
C)



B)



D)



Answer: B

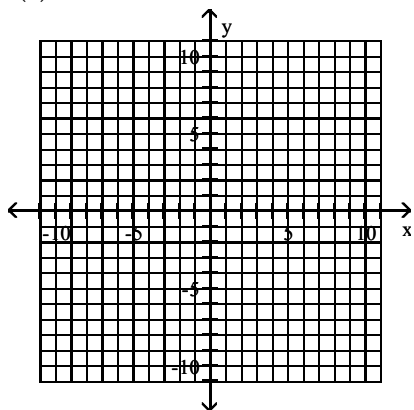
Objective: (3.1) Graph Parabolas

ALVAREZ--VIDEO 37

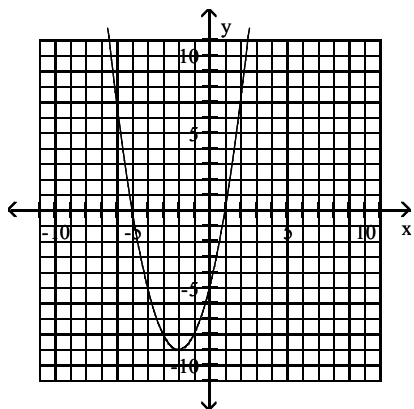
S79-24,25,26

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

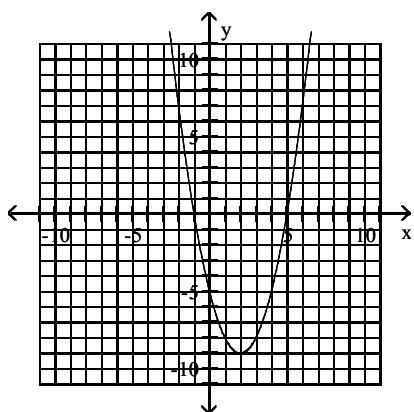
13) _____



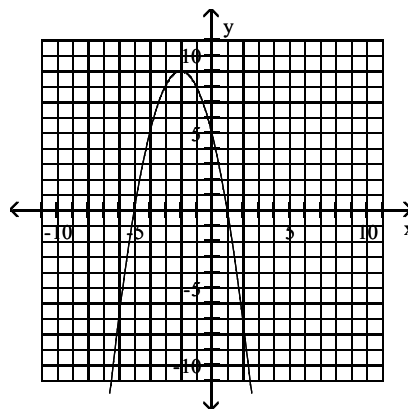
A)



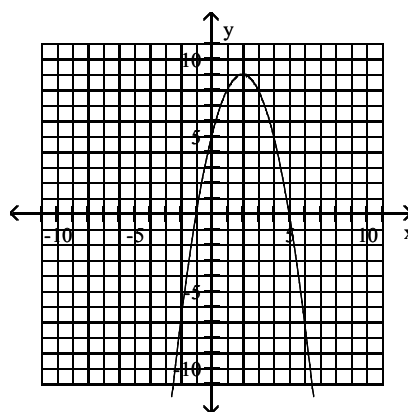
C)



B)



D)



Answer: B

Objective: (3.1) Graph Parabolas

ALVAREZ--VIDEO 38

S79-24,25,26

Solve the problem.

- 14) 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. 14) _____
- 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 S79-28

Find the zeros of the polynomial function.

- 15) $f(x) = x^3 + 5x^2 - x - 5$ 15) _____
- 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 S79-33

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

- 16) $\frac{x - 81}{x^2 - 15x + 56}$ 16) _____
- A) $x = 8, x = 7$ B) $x = -8, x = -7$
C) $x = -81$ D) $x = 8, x = 7, x = -81$

Answer: A

Objective: (3.5) Identify Vertical Asymptotes

ALVAREZ--VIDEO 54 S79-36

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

- 17) $g(x) = \frac{4x^2 - 7x - 5}{7x^2 - 3x + 7}$ 17) _____
- A) $y = \frac{7}{3}$ B) $y = 0$
C) $y = \frac{4}{7}$ D) no horizontal asymptote

Answer: C

Objective: (3.5) Identify Horizontal Asymptotes

ALVAREZ--VIDEO 56 S79-36

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

$$18) f(x) = \frac{x^2 + 3x - 8}{x - 4}$$

18) _____

A) $y = x + 3$

B) $y = x$

C) $y = x + 7$

D) no slant asymptote

Answer: C

Objective: (3.5) Identify Slant Asymptotes

ALVAREZ--VIDEO 57

Find the domain of the logarithmic function.

$$19) f(x) = \ln(6 - x)$$

19) _____

A) $(-\infty, 6)$

B) $(-6, \infty)$

C) $(-\infty, 0)$

D) $(-\infty, 6)$ or $(6, \infty)$

Answer: A

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

ALVAREZ--VIDEO 63 S79-44,46,47,53

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

$$20) \log_a \left(\frac{x^4 \sqrt[3]{x+5}}{(x-2)^2} \right)$$

20) _____

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

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 S79-59,60

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

$$21) 4^x + 10 = 8^x - 2$$

21) _____

A) {22}

B) {26}

C) {16}

D) {12}

Answer: B

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

ALVAREZ--VIDEO 70 S79-39

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.

$$22) \log_3 (x + 4) = 1$$

22) _____

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 S79-48

23) $\log x + \log (x - 1) = \log 12$

A) $\{4, -3\}$

B) $\{-3\}$

C) $\left\{\frac{13}{2}\right\}$

D) $\{4\}$

23) _____

Answer: D

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

ALVAERZ--VIDEO 80 S79-64

Solve the problem.

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

24) _____

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

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 S79-70

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

25) _____

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) 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 S79-70

Solve the system of equations.

26) $x + y + z = -6$

26) _____

$x - y + 3z = 2$

$3x + y + z = -14$

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 S79-77

Use Cramer's rule to solve the system.

27) $2x + 3y = -4$

27) _____

$5x + y = -23$

A) $\{-5, 2\}$

B) $\{2, -5\}$

C) $\{-2, -5\}$

D) $\{-5, -2\}$

Answer: A

Objective: (6.5) Solve a System of Linear Equations in Two Variables Using Cramer's Rule

ALVAREZ VIDEO 96 S79-76

Find the indicated sum.

$$28) \sum_{i=3}^5 (i^2 + 2)$$

28) _____

A) 30

B) 56

C) 65

D) 18

Answer: B

Objective: (8.1) Use Summation Notation

ALVAREZ--VIDEO 98 S79-78

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

$$29) (2x + 3)^3$$

29) _____

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

ALVAREZ--VIDEO 99 S79-79