

Name _____ aat1m1314bli2810S11aw

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SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the equation by factoring.

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

1) _____

ALVAREZ VIDEO 4 M50-3

Solve the equation using the quadratic formula.

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

2) _____

**ALVAREZ VIDEO 8 m49-2 m50-7 mathlab102 #10
mathlab44 #3**

Solve the radical equation, and check all proposed solutions.

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

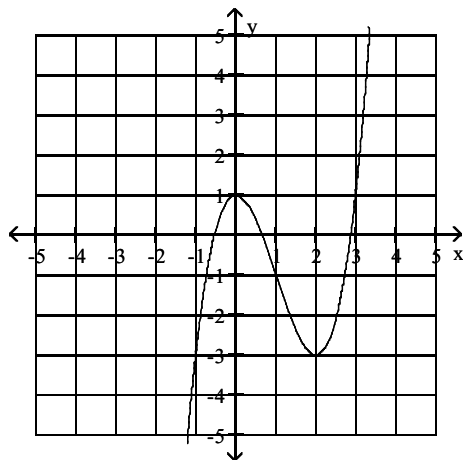
3) _____

ALVAREZ--**VIDEO 9 m49-3 m50-9 mathlab102 #16
mathlab44 #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) _____

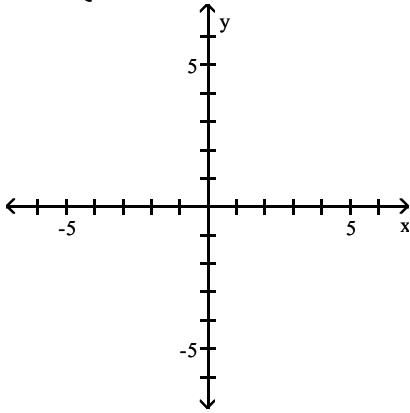


ALVAREZ--**VIDEO 15 m49-5 mathlab102 #21,22 mathlab44 #5**

Graph the function.

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

5) _____



ALVAREZ--VIDEO 17 m49-6 m50-10 mathlab102 #24
mathlab44 #5

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

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

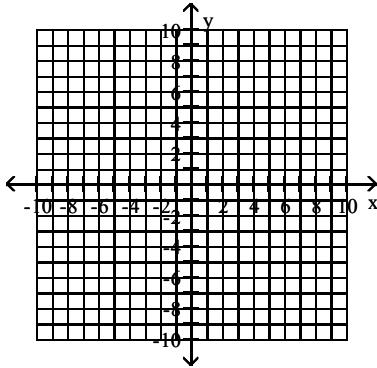
6) _____

ALVAREZ--VIDEO 18 m49-7 m50-11 mathlab102 #25
mathlab44 #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) _____

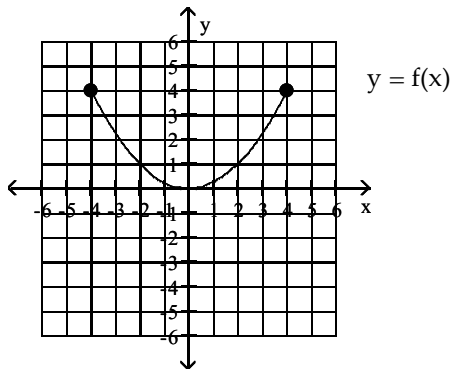


ALVAREZ--VIDEO 21 m49-10

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) _____



ALVAREZ --VIDEO 22 mathlab102 #26

Find the domain of the function.

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

9) _____

ALVAREZ--VIDEO 23 m49-9 m50-12mathlab102 #30
mathlab44 #7

Given functions f and g , perform the indicated operations.

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

Find fg .

10) _____

ALVAREZ VIDEO 28 M50-13

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

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

$(f \circ g)(x)$

11) _____

ALVAREZ--VIDEO 30 m49-13 m50-14 mathlab102 #36
mathlab44 #9

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

$(g \circ f)(x)$

12) _____

ALVAREZ VIDEO 31 M49-14 M50-14 M102-35 M44-9

Find the distance between the pair of points.

13) $(-1, -5)$ and $(-7, 3)$

13) _____

ALVAREZ--VIDEO 33 m49-15 m50-15mathlab102 #38
mathlab44 #10

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

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

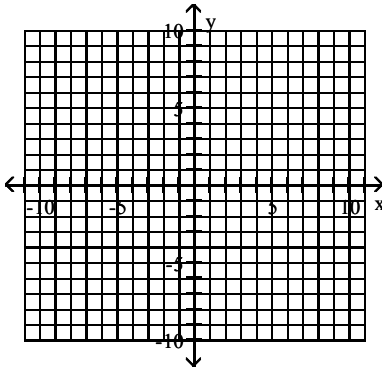
14) _____

ALVAREZ--VIDEO 35 m49-16 m50-16 mathlab102 #39
mathlab44 #11

Graph the equation.

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

15) _____

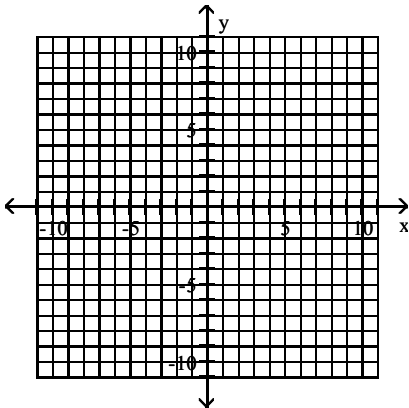


ALVAREZ--VIDEO 36 m49-17 m50-17mathlab102 #41
mathlab44 #12

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

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

16) _____



ALVAREZ--VIDEO 38 m49-19 m50-20,21 mathlab102 #43
mathlab44 #13,14,15,16

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) _____

ALVAREZ--**VIDEO 39 m49-20 mathlab102 #44,45,46**

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) _____

ALVAREZ--**VIDEO 48 m49-21 m50-22 mathlab102 #50
mathlab44 #17**

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

19) _____

ALVAREZ--**VIDEO 49 m49-24 m50-23 mathlab102 #54**
mathlab44 #18

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

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

20) _____

ALVAREZ--**VIDEO 54 m49-27 m50-26 mathlab44 #21**

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

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

21) _____

ALVAREZ--VIDEO 56 m49-29 m50-28 mathlab44 #23

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

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

22) _____

ALVAREZ--VIDEO 57 m49-30 m50-25 mathlab44 #20

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) _____

ALVAREZ--VIDEO 60 m50-29 mathlab102 #60

- 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) _____

ALVAREZ--VIDEO 62 m50-29 mathlab102 #60

Find the domain of the logarithmic function.

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

25) _____

**ALVAREZ--VIDEO 63 m49-31 m50-30 mathlab102 #61
mathlab44 #24**

Answer Key

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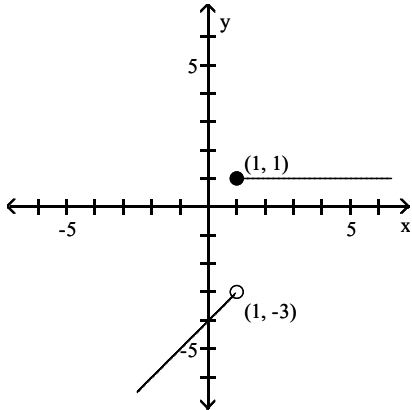
1) $\left\{-\frac{4}{3}, -\frac{2}{5}\right\}$

2) $\{3 + 4i, 3 - 4i\}$

3) $\{4\}$

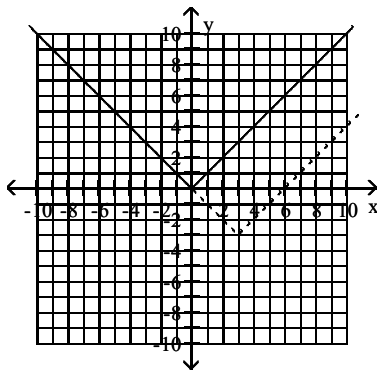
4) maximum: $(0, 1)$; minimum: $(2, -3)$

5)

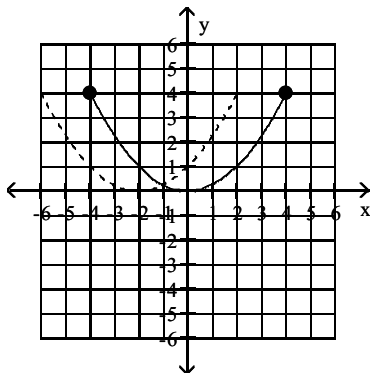


6) $2x + h + 7$

7)



8)



9) $(-\infty, 3]$

10) $6x^2 + 28x + 16$

11) $15x + 8$

12) $8x^2 + 4x + 10$

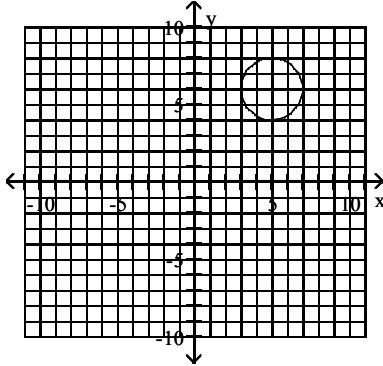
13) 10

Answer Key

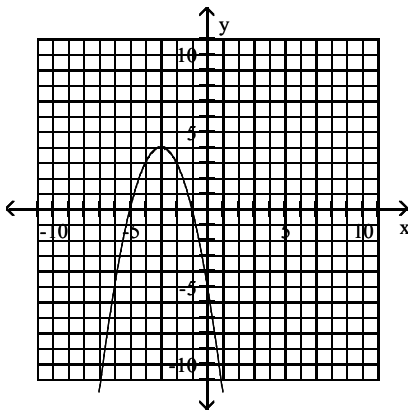
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14) $(4, \frac{15}{2})$

15)



16)



17) 400 ft

18) $\{-3, -2, 3\}$

19) $\{1 + i, 1 - i, -8\}$

20) $x = 7, x = 5$

21) $y = \frac{3}{2}$

22) $y = x + 16$

23) 276

24) 0.16 mg

25) $(-\infty, 4)$