

05-21-17 07-01-15
05-29-16 07-03-19

Student: _____
Date: _____

Instructor: Alfredo Alvarez
Course: Math 1314 Alvarez

Assignment:
MA1314FIESTACOREQ1414READY029

1. Solve the equation by factoring.

$$8x^2 + 10x - 7 = 0$$

$a=8$ $b=10$ $c=-7$
The solution set is .

(Use a comma to separate answers as needed.)

Answer: $\frac{1}{2}, -\frac{7}{4}$

ID: 1.5.5

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-10 \pm \sqrt{(10)^2 - 4(8)(-7)}}{2(8)}$$

$$x = \frac{-10 \pm \sqrt{100 + 224}}{16}$$

$$x = \frac{-10 \pm \sqrt{324}}{16}$$

$$x = \frac{-10 \pm 18}{16}$$

$$x = \frac{-10 + 18}{16} \text{ or } x = \frac{-10 - 18}{16}$$

$$x = \frac{8}{16} \text{ or } x = \frac{-28}{16}$$

$$x = \frac{8(1)}{8(2)} \text{ or } x = \frac{4(-7)}{4(4)}$$

$$x = \frac{1}{2}$$

$$x = -\frac{7}{4}$$

Answer

2. Solve the given radical equation. Check all proposed solutions.

$$\sqrt{3x + 28} = x + 8$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution set is .
(Use a comma to separate answers as needed.)
- B. There is no solution.

Answer: A. The solution set is -4. (Use a comma to separate answers as needed.)

ID: 1.6.15

$$(\sqrt{3x + 28})^2 = (x + 8)^2$$

$$3x + 28 = (x + 8)(x + 8)$$

$$3x + 28 = x^2 + 8x + 8x + 64$$

$$3x + 28 = x^2 + 16x + 64$$

$$0 = x^2 + 16x + 64 - 3x - 28$$

$$0 = x^2 + 13x + 36$$

$$0 = (x + 4)(x + 9)$$

but $x + 4 = 0$ OR $x + 9 = 0$

$x + 4 - 4 = 0 - 4$ OR $x + 9 - 9 = 0 - 9$

$x = -4$ OR $x = -9$

Good

BAD

ANSWER

$$\boxed{-4}$$

Check

$$\sqrt{3x + 28} = x + 8$$

$$\sqrt{3(-4) + 28} = (-4) + 8$$

$$\sqrt{-12 + 28} = -4 + 8$$

$$\sqrt{16} = 4$$

$$4 = 4$$

Good

$$\sqrt{3(-9) + 28} = (-9) + 8$$

$$\sqrt{-27 + 28} = -9 + 8$$

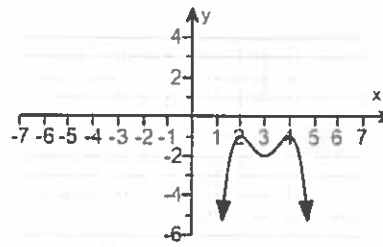
$$\sqrt{1} = -1$$

$$1 \neq -1$$

BAD

3. Use the graph to determine

- (a) open intervals on which the function is increasing, if any.
- (b) open intervals on which the function is decreasing, if any.
- (c) open intervals on which the function is constant, if any.



(a) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The function is increasing on the interval(s) _____ .
(Type your answer in interval notation. Use a comma to separate answers as needed.)
- B. The function is never increasing.

(b) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The function is decreasing on the interval(s) _____ .
(Type your answer in interval notation. Use a comma to separate answers as needed.)
- B. The function is never decreasing.

(c) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

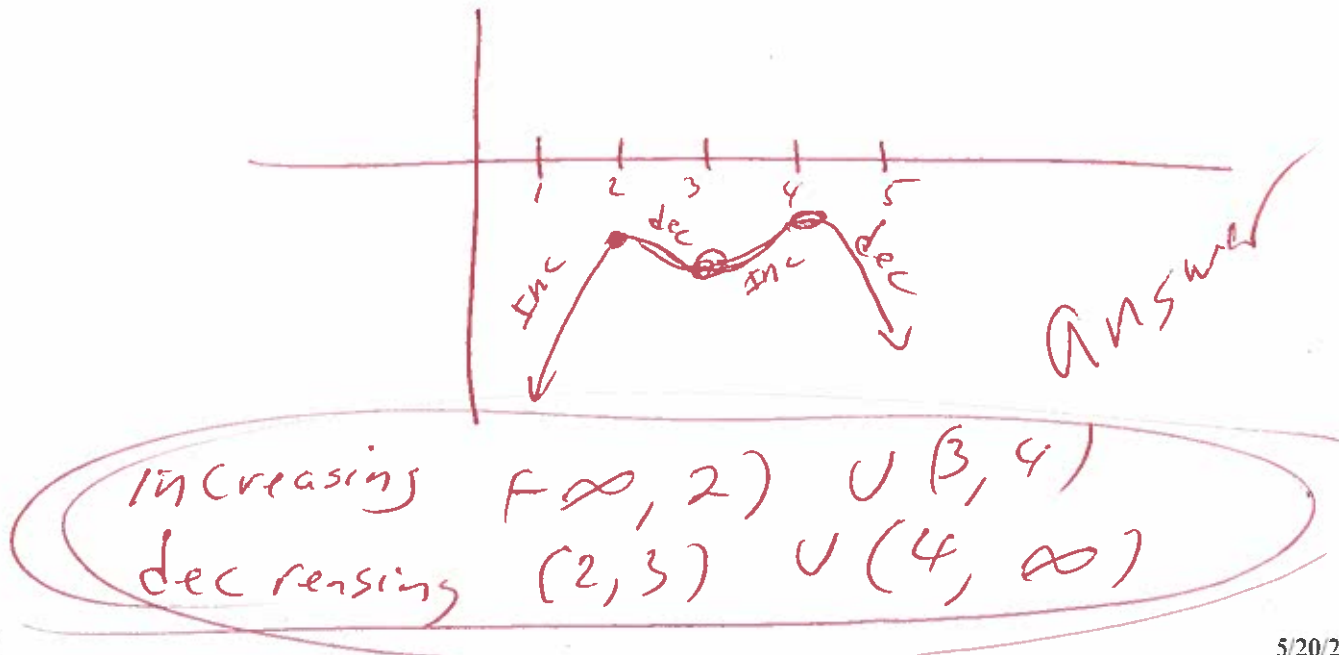
- A. The function is constant on the interval(s) _____ .
(Type your answer in interval notation. Use a comma to separate answers as needed.)
- B. The function is never constant.

Answers A. The function is increasing on the interval(s) $(-\infty, 2), (3, 4)$.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

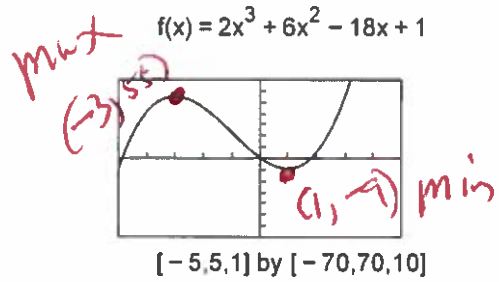
A. The function is decreasing on the interval(s) $(2, 3), (4, \infty)$.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. The function is never constant.

ID: 2.2.9



4. The graph and equation of the function f are given.
- Use the graph to find any values at which f has a relative maximum, and use the equation to calculate the relative maximum for each value.
 - Use the graph to find any values at which f has a relative minimum, and use the equation to calculate the relative minimum for each value.



a. Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The function f has (a) relative maxima(maximum) at _____ and the relative maxima(maximum) are(is) _____.
(Use a comma to separate answers as needed.)
- B. The function f has no relative maxima.

b. Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The function f has (a) relative minima(minimum) at _____ and the relative minima(minimum) are(is) _____.
(Use a comma to separate answers as needed.)
- B. The function f has no relative minima.

Answers A.

The function f has (a) relative maxima(maximum) at and the relative maxima(maximum) are(is) .

(Use a comma to separate answers as needed.)

A.

The function f has (a) relative minima(minimum) at and the relative minima(minimum) are(is) .

(Use a comma to separate answers as needed.)

ID: 2.2.15

~~Use graphing calculator~~

$x_{min} = -5$
 $x_{max} = 5$
 $y_{min} = -70$
 $y_{max} = 70$

$y = 2x^3 + 6x^2 - 18x + 1$

max = (-3, 55)

min = (1, -9)

Answer

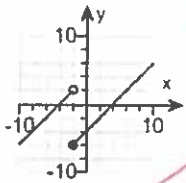
5. The domain of the piecewise function is $(-\infty, \infty)$.
 a. Graph the function.
 b. Use your graph to determine the function's range.

$$f(x) = \begin{cases} x+4 & \text{if } x < -2 \\ x-4 & \text{if } x \geq -2 \end{cases}$$

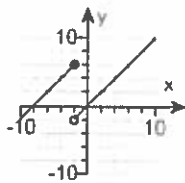
$x_{min} = -12$
 $x_{max} = 12$
 $y_{min} = -10$
 $y_{max} = 10$

- a. Choose the correct graph below.

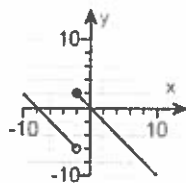
A.



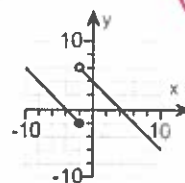
B.



C.

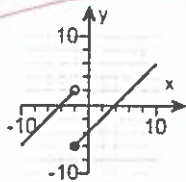


D.



- b. The range of $f(x)$ is . (Type your answer in interval notation.)

Answers



A.

$(-\infty, \infty)$

use graphing calculator

$y_1 = x+4 \div (x < -2)$ OPEN circle

$y_2 = x-4 \div (x \geq -2)$ CLOSE circle

ID: 2.2.47

6. Find the difference quotient of f ; that is, find $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$, for the following function. Be sure to simplify.

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

$\frac{f(x+h) - f(x)}{h} = \text{[]}$ (Simplify your answer.)

Answer: $2x + h - 3$

$\frac{f(x+h) - f(x)}{h} =$

ID: 2.2.61 $\frac{(x+h)^2 - 3(x+h) + 7 - (x^2 - 3x + 7)}{h} =$

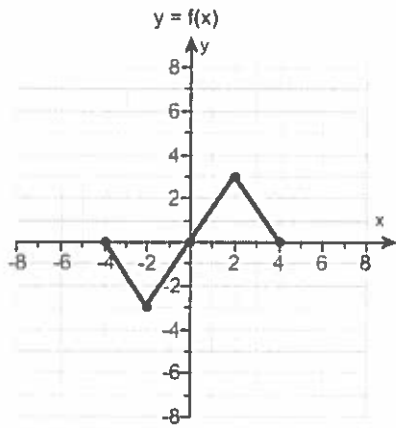
$\frac{(x+h)(x+h) - 3x - 3h + 7 - x^2 + 3x - 7}{h} =$

$\frac{x^2 + xh + xh + h^2 - 3x - 3h + 7 - x^2 + 3x - 7}{h} =$

$\frac{x^2 + 2xh + h^2 - 3x - 3h + 7 - x^2 + 3x - 7}{h} = \text{Answer}$

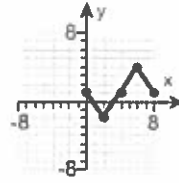
$\frac{2xh + h^2 - 3h}{h} = \frac{2xh}{h} + \frac{h^2}{h} - \frac{3h}{h} = 2x + h - 3$

7. Use the graph of $y = f(x)$ to graph the function $g(x) = f(x - 4) - 1$.

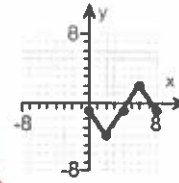


Choose the correct graph of g below.

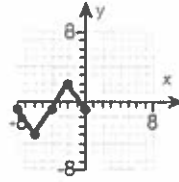
A.



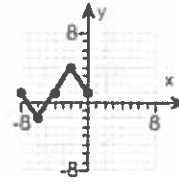
B.



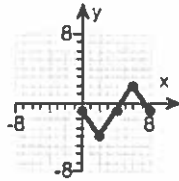
C.



D.



Answer:



B.

Answer

$g(x) = f(x - 4) - 1$

Shift right 4

Shift -1 down

ID: 2.5.21

8. Find the domain of the function.

$f(x) = \sqrt{20 - 5x}$

let $20 - 5x \geq 0$

$20 - 5x - 20 \geq 0 - 20$

$-5x \geq -20$

$\frac{-5x}{-5} \leq \frac{-20}{-5}$

*divide by a negative
turn all signs around*

$x \leq 4$

formula domain

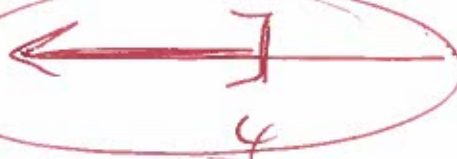
$f(x) = \sqrt{Ax + B}$

let $Ax + B \geq 0$

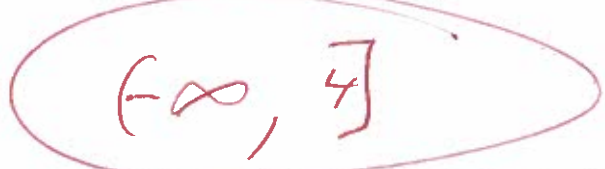
What is the domain of f ?

(Type your answer in interval notation.)

Answer: $(-\infty, 4]$



Answers



ID: 2.6.23

9. First find $f + g$, $f - g$, fg and $\frac{f}{g}$. Then determine the domain for each function.

$f(x) = 4x^2 + 27x - 81$, $g(x) = x + 9$

$(f + g)(x) = \text{[]}$ (Simplify your answer.)

What is the domain of $f + g$?

- $[0, \infty)$
- $(-\infty, \infty)$
- $(-\infty, \frac{18}{7}] \cup (\frac{18}{7}, \infty)$
- $(\frac{18}{7}, \infty)$

$(f - g)(x) = \text{[]}$ (Simplify your answer.)

What is the domain of $f - g$?

- $(-\infty, 3) \cup (3, \infty)$
- $(\frac{18}{7}, \infty)$
- $[0, \infty)$
- $(-\infty, \infty)$

$(fg)(x) = \text{[]}$

What is the domain of fg ?

- $(-\infty, \frac{45}{13}] \cup (\frac{45}{13}, \infty)$
- $(\frac{45}{13}, \infty)$
- $(-\infty, -9) \cup (-9, \infty)$
- $(-\infty, \infty)$

$(\frac{f}{g})(x) = \text{[]}$ (Simplify your answer.)

What is the domain of $\frac{f}{g}$?

- $[0, \infty)$
- $(-9, \infty)$
- $(-\infty, -9) \cup (-9, \infty)$
- $(-\infty, \infty)$

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

$4x^2 + 27x - 81 + (x + 9) =$

$4x^2 + 27x - 81 + x + 9 =$

$4x^2 + 28x - 72$

domain $(-\infty, \infty)$

$(f - g)(x)$

$f(x) - g(x) =$

$(4x^2 + 27x - 81) - (x + 9) =$

$4x^2 + 27x - 81 - x - 9 =$

$4x^2 + 26x - 90 =$

domain $(-\infty, \infty)$

$(fg)(x) =$

$f(x) \cdot g(x) =$

$(4x^2 + 27x - 81)(x + 9) =$

~~$4x^3 + 36x^2 + 27x^2 + 243x - 81x - 729 =$~~

$4x^3 + 36x^2 + 27x^2 + 243x - 81x - 729 =$

$4x^3 + 63x^2 + 162x - 729 =$

domain $(-\infty, \infty)$

$\frac{f(x)}{g(x)} =$

$\frac{4x^2 + 27x - 81}{x + 9} =$

$\frac{(4x - 9)(x + 9)}{(x + 9)} =$

$4x - 9 =$

domain

$(-\infty, -9) \cup (-9, \infty)$

Answers $4x^2 + 28x - 72$

$(-\infty, \infty)$

$4x^2 + 26x - 90$

$(-\infty, \infty)$

$4x^3 + 63x^2 + 162x - 729$

$(-\infty, \infty)$

$4x - 9$

$(-\infty, -9) \cup (-9, \infty)$

ID: 2.6.35

10. For $f(x) = x + 3$ and $g(x) = 5x + 2$, find the following functions.

a. $(f \circ g)(x)$; b. $(g \circ f)(x)$; c. $(f \circ g)(-2)$; d. $(g \circ f)(-2)$

a. $(f \circ g)(x) = \text{_____}$ (Simplify your answer.)

b. $(g \circ f)(x) = \text{_____}$ (Simplify your answer.)

c. $(f \circ g)(-2) = \text{_____}$

d. $(g \circ f)(-2) = \text{_____}$

Answers $5x + 5$

$5x + 17$

-5

7

Handwritten work for problem 10:

$(f \circ g)(x)$
 $f(g(x)) =$
 $f(5x+2) =$
 $(5x+2)+3 =$
 $5x+2+3$
 $5x+5$

$(g \circ f)(x)$
 $g(f(x)) =$
 $g(x+3) =$
 $5(x+3)+2$
 $5x+15+2$
 $5x+17$

$(f \circ g)(-2) =$
 $f(g(-2)) =$
 $f(-10+5) =$
 $(-10+5)+3 =$
 $-5+3 =$
 -2

$(g \circ f)(-2) =$
 $g(f(-2)) =$
 $g(1) =$
 $5(1)+2 =$
 $5+2 =$
 7

ID: 2.6.53

11. Find the distance between the pair of points.

$(10,5)$ and $(7,9)$

The distance between the points is _____ units.
 (Round to two decimal places as needed.)

Answer: 5

ID: 2.8.1

Handwritten work for problem 11:

$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
 $d = \sqrt{(10 - 7)^2 + (5 - 9)^2}$
 $d = \sqrt{(3)^2 + (-4)^2}$
 $d = \sqrt{9 + 16}$
 $d = \sqrt{25}$
 $d = 5$ Answer

12. Find the midpoint of the line segment with the given endpoints.

(4,2) and (6,8)

The midpoint of the segment is .
(Type an ordered pair.)

Answer: (5,5)

ID: 2.8.19

$Mid = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ $mid = \left(\frac{10}{2}, \frac{10}{2} \right)$

$mid = \left(\frac{(4) + (6)}{2}, \frac{(2) + (8)}{2} \right)$ $midpoint = (5, 5)$
 $mid = \left(\frac{4+6}{2}, \frac{2+8}{2} \right)$
Answer

13. Complete the square and write the equation of the circle in standard form. Then determine the center and radius of the circle to graph the equation.

$x^2 + y^2 + 8x + 4y + 4 = 0$

$x^2 + 8x + y^2 + 4y + 4 = 0$
The equation in standard form is .

(Simplify your answer.)

$x^2 + 8x + y^2 + 4y = -4$

Use the graphing tool to graph the circle.

$x^2 + 8x + \left(\frac{1}{2}(8)\right)^2 + y^2 + 4y + \left(\frac{1}{2}(4)\right)^2 = -4 + \left(\frac{1}{2}(8)\right)^2 + \left(\frac{1}{2}(4)\right)^2$

$x^2 + 8x + (4)^2 + y^2 + 4y + (2)^2 = -4 + (4)^2 + (2)^2$

$x^2 + 8x + 16 + y^2 + 4y + 4 = -4 + 16 + 4$

$(x+4)(x+4) + (y+2)(y+2) = 16$

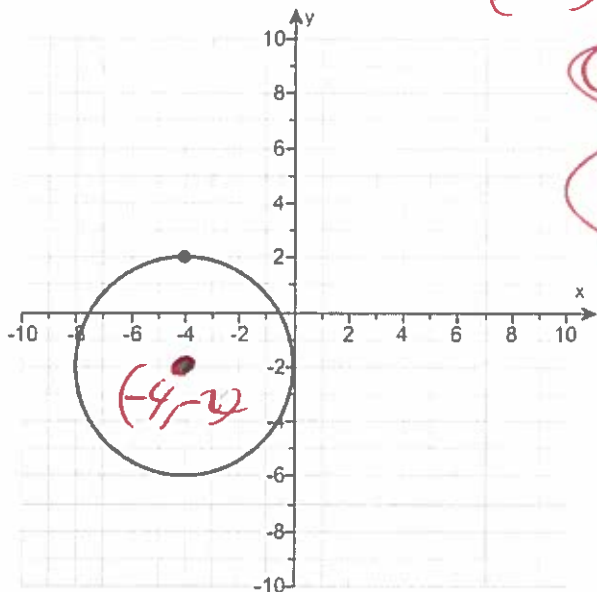
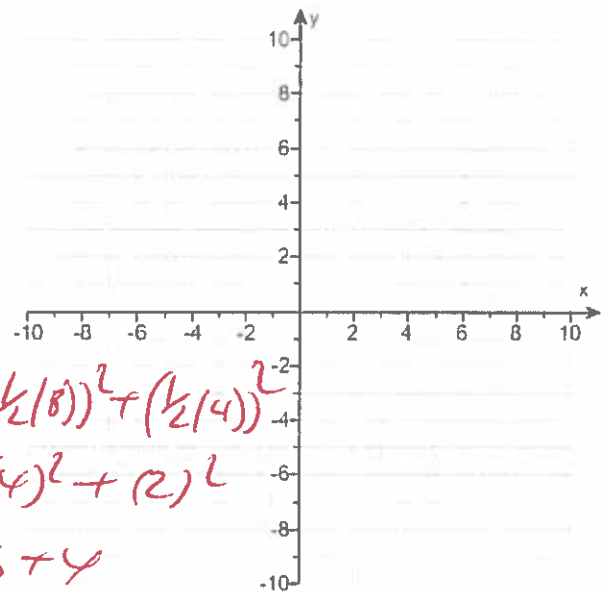
Answers $(x+4)^2 + (y+2)^2 = 16$

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

Center = (-4, -2)

Radius = $\sqrt{16} = 4$

Answer

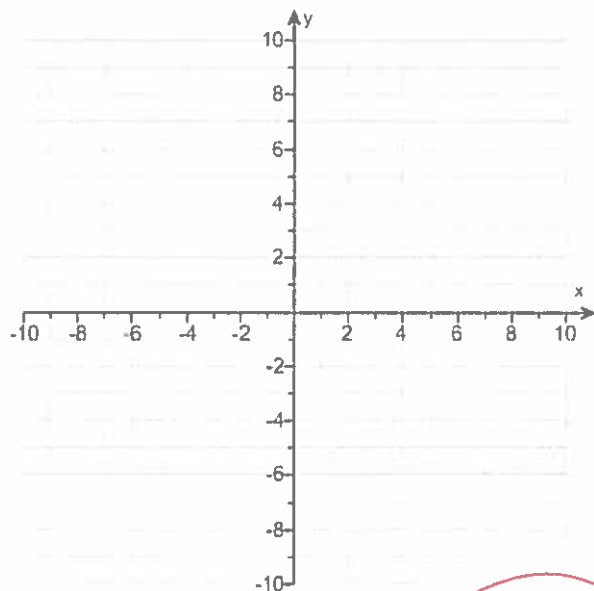


ID: 2.8.53

14. Use the vertex and intercepts to sketch the graph of the quadratic function. Give the equation of the parabola's axis of symmetry. Use the graph to determine the function's domain and range.

$$f(x) = x^2 + 6x + 8$$

Use the graphing tool to graph the equation. Use the vertex and one of the intercepts when drawing the graph.



The axis of symmetry is .

(Type an equation.)

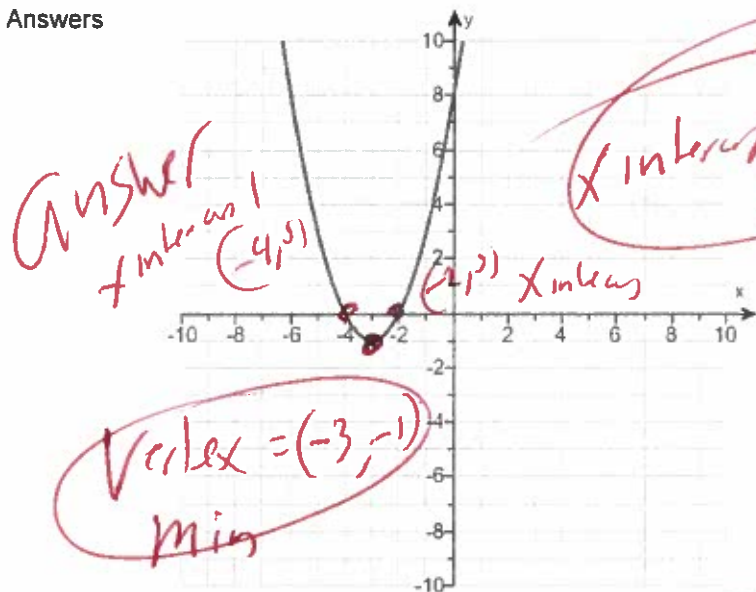
The domain of f is .

(Type your answer in interval notation.)

The range of f is .

(Type your answer in interval notation.)

Answers



x	$f(x)$
-4	0
-3	-1
-2	0

use graphing calculator

$$x = -3$$

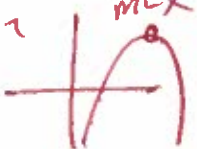
$$(-\infty, \infty)$$

$$[-1, \infty)$$

$$y = x^2 + 6x + 8$$

ID: 3.1.27

axis of symmetry
 $x = -3$

graph open down 

15. Consider the function $f(x) = -2x^2 + 20x - 7$.

$a = -2, b = 20, c = -7$

- a. Determine, without graphing, whether the function has a minimum value or a maximum value.
- b. Find the minimum or maximum value and determine where it occurs.
- c. Identify the function's domain and its range.

Vertex = $(-\frac{b}{2a}, f(\frac{-b}{2a}))$
 Vertex = $(-\frac{20}{2(-2)}, f(\frac{-20}{2(-2)}))$
 Vertex = $(\frac{-20}{-4}, f(\frac{-20}{-4}))$

- a. The function has a (1) value.
 - b. The minimum/maximum value is . It occurs at $x =$.
 - c. The domain of f is . (Type your answer in interval notation.)
- The range of f is . (Type your answer in interval notation.)

Vertex = $(5, f(5))$
 Vertex = $(5, -2(5)^2 + 20(5) - 7)$
 Vertex = $(5, -2(5)(5) + 20(5) - 7)$
 Vertex = $(5, -50 + 100 - 7)$

- (1) maximum
- minimum

- Answers (1) maximum
- 43
 - 5
 - $(-\infty, \infty)$
 - $(-\infty, 43]$

Vertex = $(5, 43)$

answer **Max** at $(5, 43)$

ID: 3.1.41

16. The following equation is given.

Possible $\frac{\pm 18}{\pm 1} = \pm 18, \pm 9, \pm 6, \pm 3, \pm 2, \pm 1$

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

try Synthetic division

- a. List all rational roots that are possible according to the Rational Zero Theorem.
-
- (Use a comma to separate answers as needed.)

$3 \mid 1 \quad -2 \quad -9 \quad 18$
 $\quad \quad 3 \quad 3 \quad -18$

 $1 \quad 1 \quad -6 \quad 0$

- b. Use synthetic division to test several possible rational roots in order to identify one actual root.

One rational root of the given equation is .

(Simplify your answer.)

$x^2 + x - 6 = 0$
 $(x-2)(x+3) = 0$
 $x-2=0$ OR $x+3=0$

- c. Use the root from part (b.) and solve the equation.

The solution set of $x^3 - 2x^2 - 9x + 18 = 0$ is .

(Simplify your answer. Type an exact answer, using radicals as needed. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)

$x-2+2=0+2$ OR $x+3-3=0-3$
 $x=2$ OR $x=-3$

- Answers 1, -1, 3, -3, 18, -18, 2, -2, 6, -6, 9, -9
- 2
 - 2, 3, -3

answer

ID: 3.4.17

17. Find the vertical asymptotes, if any, and the values of x corresponding to holes, if any, of the graph of the rational function.

$$h(x) = \frac{x+3}{x(x-3)}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice. (Type an equation. Use a comma to separate answers as needed.)

- A. The vertical asymptote(s) is(are) _____ and hole(s) corresponding to _____
- B. The vertical asymptote(s) is(are) _____. There are no holes.
- C. There are no vertical asymptotes but there is(are) hole(s) corresponding to _____
- D. There are no discontinuities.

Set $x(x-3) = 0$
 $x=0$ or $x-3=0$
 $x-3+3 = 0+3$
 $x=3$

Answer: B. The vertical asymptote(s) is(are) . There are no holes.

answer vertical asymptotes

ID: 3.5.23

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

$$g(x) = \frac{18x^2}{9x^2 + 1}$$

$\lim_{x \rightarrow \infty} \left(\frac{18x^2}{9x^2+1} \right) \cdot \frac{\frac{1}{x^2}}{\frac{1}{x^2}} = \lim_{x \rightarrow \infty} \frac{\frac{18x^2}{x^2}}{\frac{9x^2}{x^2} + \frac{1}{x^2}} =$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The horizontal asymptote is _____. (Type an equation.)
- B. There is no horizontal asymptote.

$= \lim_{x \rightarrow \infty} \frac{18}{9 + \frac{1}{x^2}} =$
 $\frac{18}{9+0} =$
 $\frac{18}{9} = 2$

Answer: A. The horizontal asymptote is . (Type an equation.)

ID: 3.5.39

horizontal asymptote $y=2$

19. Use properties of logarithms to expand the logarithmic expression as much as possible. Evaluate logarithmic expressions without using a calculator if possible.

$$\log_b \left(\frac{x^3 y}{z^3} \right)$$

$\rightarrow \log_b(x^3 y) - \log_b(z^3) =$
 $\log_b(x^3) + \log_b(y) - \log_b(z^3) =$

$$\log_b \left(\frac{x^3 y}{z^3} \right) = \text{_____}$$

$2 \log_b(x) + \log_b(y) - 3 \log_b(z)$

Answer: $3 \log_b x + \log_b y - 3 \log_b z$

ID: 4.3.27

formulas $\log_b \left(\frac{A}{B} \right) = \log_b(A) - \log_b(B)$
 $\log_b(AB) = \log_b(A) + \log_b(B)$
 $\log_b(A^N) = N \log_b(A)$

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

$9^{x+5} = 81^{x-8}$

$\rightarrow (3^2)^{x+5} = (3^4)^{x-8}$

$2x+10 = 4x-32$

$2x-4x = -42-4x$

$-2x = -42$

$\frac{-2x}{-2} = \frac{-42}{-2}$

$x = 21$

The solution set is

Answer: 21

ID: 4.4.19

Answer

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

$\log_2(x+23) = 5$

rewrite $2^5 = x+23$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The solution set is { }. (Type an integer or a simplified fraction.)

B. There is no solution.

Answer: A. The solution set is . (Type an integer or a simplified fraction.)

ID: 4.4.55

Answer

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = x+23$

$32 = x+23$

$32 - 23 = x+23 - 23$

$9 = x$

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

$\log_6(x+24) - \log_6(x-11) = 2$

$\rightarrow \log_6\left(\frac{x+24}{x-11}\right) = 2$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The solution set is { }. (Simplify your answer. Use a comma to separate answers as needed.)

B. There is no solution.

Answer: A. The solution set is . (Simplify your answer. Use a comma to separate answers as needed.)

ID: 4.4.71

Check

$\log_6(x+24) - \log_6(x-11) = 2$

$\log_6(36) - \log_6(35) = 2$

Good Good

$36(x-11) = 1(x+24)$

$36x - 396 = x + 24$

$36x - 396 + 396 = x + 24 + 396$

$36x = x + 420$

$36x - 1x = 1x + 420 - 1x$

$35x = 420$

$\frac{35x}{35} = \frac{420}{35}$

$x = 12$

Answer

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

$\log x + \log(x+2) = \log 48$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution set is { }.
- B. There is no solution.

Answer: A. The solution set is .

ID: 4.4.87

Handwritten work for Q23:
 $\log(x)(x+2) = \log(48)$
 $x(x+2) = 48$
 $x^2 + 2x - 48 = 0$
 $(x-6)(x+8) = 0$
 $x-6=0$ OR $x+8=0$
 $x=6$ OR $x=-8$
 Check:
 $\log(6) + \log(6+2) = \log(48)$
 $\log(6) + \log(8) = \log(48)$ Good
 $\log(-8) + \log(-8+2) = \log(48)$ BAD
 $\log(-8) + \log(-6) = \log(48)$ BAD
 Answer: $x=6$

24. Complete the table for a savings account subject to 4 compoundings yearly.

$A = P \left(1 + \frac{r}{n} \right)^{nt}$

$24000 = 13000 \left(1 + \frac{0.0625}{4} \right)^{4t}$
 $24000 = 13000 (1.015625)^{4t}$

Amount Invested	Number of Compounding Periods	Annual Interest Rate	Accumulated Amount	Time t in Years
\$13,000	4	6.25%	\$24,000	?

Let A represent the accumulated amount, P the amount invested, n the number of compounding periods, r the annual interest rate, and t the time. Find the time, t.

t = years

(Do not round until the final answer. Then round to one decimal place as needed.)

Answer: 9.9

ID: 4.4.107

Handwritten work for Q24:
 $24000 = 13000 (1.015625)^{4t}$
 $\frac{24000}{13000} = \frac{13000 (1.015625)^{4t}}{13000}$
 $1.846153846 = (1.015625)^{4t}$
 $\ln(1.846153846) = \ln(1.015625)^{4t}$
 $\ln(1.846153846) = 4t \ln(1.015625)$
 $0.88611151 = 4t$
 $9.9 = t$
 Answer: 9.9

25. Complete the table for a savings account subject to continuous compounding.

$(A = Pe^{rt})$

$12000 = 6000 e^{0.08t}$

Amount Invested	Annual Interest Rate	Accumulated Amount	Time t in years
\$6000	8%	\$12,000	?

Let A represent the accumulated amount, P the amount invested, r the annual interest rate, and t the time. Find the time, t.

t ≈ years

(Round to one decimal place as needed.)

Answer: 8.7

ID: 4.4.111

Handwritten work for Q25:
 $12000 = 6000 e^{0.08t}$
 $\frac{12000}{6000} = \frac{6000 e^{0.08t}}{6000}$
 $2 = e^{0.08t}$
 $\ln(2) = \ln(e^{0.08t})$
 $\ln(2) = 0.08t \ln(e)$
 $\ln(2) = 0.08t(1)$
 $\ln(2) = 0.08t$
 $\frac{\ln(2)}{0.08} = \frac{0.08t}{0.08}$
 $8.664339757 = t$
 OR
 $8.7 = t$ Round
 Answer: 8.7

26. Solve the given system of equations.

$$\begin{aligned} x + y + 5z &= -16 \\ x + y + 3z &= -10 \\ x + 5y + 9z &= -24 \end{aligned}$$

*Use graphy Calc
2nd, matrix, edit, A, 3x4*

$$[A] = \begin{bmatrix} 1 & 1 & 5 & -16 \\ 1 & 1 & 3 & -10 \\ 1 & 5 & 9 & -24 \end{bmatrix}$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. There is one solution. The solution set is $\{(\underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}})\}$. (Simplify your answers.)
- B. There are infinitely many solutions.
- C. There is no solution.

2nd matrix, Math, rref

rref(A) =

$$\begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & -3 \end{bmatrix} \begin{matrix} x \\ y \\ z \end{matrix}$$

Answer: A.

There is one solution. The solution set is $\{(\underline{-2}, \underline{1}, \underline{-3})\}$. (Simplify your answers.)

answer (x, y, z) = (-2, 1, -3)

ID: 5.2.5

27. Write the first four terms of the sequence whose general term is given.

$$a_n = \frac{2n}{n+5}$$

$a_1 =$ (Simplify your answer.)

$a_2 =$ (Simplify your answer.)

$a_3 =$ (Simplify your answer.)

$a_4 =$ (Simplify your answer.)

Answers

- Answers $\frac{1}{3}$
- $\frac{4}{7}$
- $\frac{3}{4}$
- $\frac{8}{9}$

$$a_1 = \frac{2(1)}{1+5} = \frac{2}{6} = \frac{2(1)}{2(3)} = \frac{1}{3}$$

$$a_2 = \frac{2(2)}{2+5} = \frac{4}{7}$$

$$a_3 = \frac{2(3)}{3+5} = \frac{6}{8} = \frac{2(3)}{2(4)} = \frac{3}{4}$$

$$a_4 = \frac{2(4)}{4+5} = \frac{8}{9}$$

ID: 8.1.9

28. Find the indicated sum.

$$\sum_{k=1}^5 k(k+4)$$

$\sum_{k=1}^5 k(k+4) =$ (Simplify your answer.)

Answer: 115

ID: 8.1.33

Handwritten work for problem 28:

$$1(1+4) + 2(2+4) + 3(3+4) + 4(4+4) + 5(5+4) =$$

$$1(5) + 2(6) + 3(7) + 4(8) + 5(9) =$$

$$5 + 12 + 21 + 32 + 45 =$$

Answer: 115

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

$$(x+4)^5$$

The first three terms of the binomial expansion are .
(Simplify your answer.)

Answer: $x^5 + 20x^4 + 160x^3$

ID: 8.5.31

Handwritten work for problem 29:

$$\binom{5}{0} (x)^5 (4)^0 + \binom{5}{1} (x)^4 (4)^1 + \binom{5}{2} (x)^3 (4)^2 =$$

$$(1)(x^5)(1) + (5)(x^4)(4) + (10)(x^3)(16) =$$

$$x^5 + 20x^4 + 160x^3 =$$

Answer

Use binomial theorem

5 Math, Prob, nCr 0 = 1

5 Math, Prob, nCr 1 = 5

5 Math, Prob, nCr 2 = 10