Problem 1

If $f(x) = x + \sqrt{2 - x}$ and $g(x) = u + \sqrt{2 - u}$, is it true that $f = g$?

Solution

True

Problem 2

If

$$f(x) = \frac{x^2 - x}{x - 1} \quad \text{and} \quad g(x) = x$$
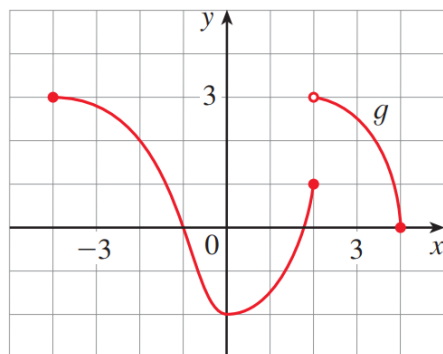
is it true that $f = g$?

Solution

False

Problem 3

The graph of a function g is given:

Source: James Stewart, Calculus: Early Transcendentals [9e]

1. *State the values of $g(-2)$, $g(0)$, $g(2)$ and $g(3)$*

   Solution

   $g(-2) = 2 \quad g(0) = -2 \quad g(2) = 1 \quad g(3) = 2.5$

2. *For what value(s) of x is $g(x) = 3$?*

   Solution

   $g(x) = 3 \Rightarrow x = -4$

3. *For what value(s) of x is $g(x) \leq 3$?*

Solution

$g(x) \leq 3 \Rightarrow x \in [-4, 4]$

4. *State the domain and range of g*

Solution

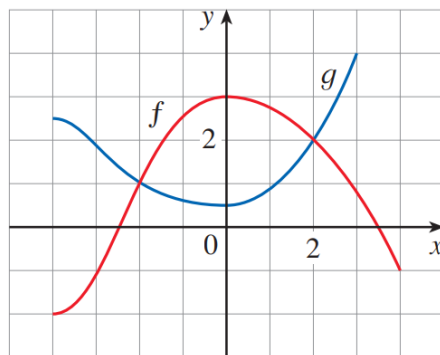Domain : $[-4, 4]$ Range : $[-2, 3]$

5. *On what interval(s) is g increasing?*

Solution

$[0, 2]$

Problem 4

The graph of f and g are given:

Source: James Stewart, Calculus: Early Transcendentals [9e]

1. *State the values of $f(-4)$ and $g(3)$*

Solution

$f(-4) = -2 \quad g(3) = 4$

2. *Which is larger, $f(-3)$ or $g(-3)$?*

Solution

$g(-3)$

3. *For what values of x is $f(x) = g(x)$?*

Solution

$x = \pm 2$

4. *On what interval(s) is $f(x) \leq g(x)$?*

Solution

$[-4, -2] \cup [2, 3]$

5. *State the solution of the equation $f(x) = -1$*

Solution

$f(x) = -1 \Rightarrow x = -3$

6. *On what interval(s) is g decreasing?*

Solution

$[-4, 0]$

7. *State the domain and range of f*

Solution

Domain : $[-4, 4]$ Range : $[-2, 3]$

8. *State the domain and range of g*

Solution
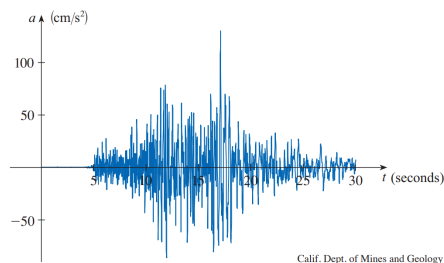
Domain : $[-4, 3]$ Range : $[0.5, 4]$

Problem 5

Figure was recorded by an instrument operated by the California Department of Mines and Geology at the University Hospital of the University of Southern California in Los Angeles. Use it to estimate the range of the vertical ground acceleration function at USC during the North-ridge earthquake.

Solution

$[-75, 130]\ (cm/s^2)$

Source: James Stewart, Calculus: Early Transcendentals [9e]

Problem 6

In this section we discussed examples of ordinary, everyday functions: population is a function of time, postage cost is a function of package weight, water temperature is a function of time. Give three other examples of function from everyday life that are described verbally. What can you say about the domain and range of each of your functions? If possible, sketch a rough graph of each function.

Solution

Problem 7

Determine whether the equation or table defines y as a function of x:

$$3x - 5y = 7$$

Solution

True

$$y = \frac{3x - 7}{5}$$

Problem 8

Determine whether the equation or table defines y as a function of x:

$$3x^2 - 2y = 5$$

Solution

True

$$y = \frac{3x^2 - 5}{2}$$

Problem 9

Determine whether the equation or table defines y as a function of x:

$$x^2 + (y - 3)^2 = 5$$

Solution

False

$$y = \pm(\sqrt{3x^2 - 5} + 3)$$

Problem 10

Determine whether the equation or table defines y as a function of x:

$$2xy + 5y^2 = 4$$

Solution

False

$$y = \frac{-b' \pm \sqrt{(b')^2 - ac}}{a}$$
$$= \frac{-x \pm \sqrt{x^2 + 20}}{5}$$

Problem 11

Determine whether the equation or table defines y as a function of x:

$$(y + 3)^3 + 1 = 2x$$

Solution

True

$$y = \sqrt[3]{2x - 1} - 3$$

Problem 12

Determine whether the equation or table defines y as a function of x:

$$2x - |y| = 0$$

Solution

False

$$y = \pm 2x$$

Problem 13

Determine whether the equation or table defines y as a function of x:

Solution

False because $f(150) = 8$ and $f(150) = 7$

x Height (cm)	y Shoe size
180	12
150	8
150	7
160	9
175	10

Source: James Stewart, Calculus: Early Transcendentals [9e]

Problem 14

Determine whether the equation or table defines y as a function of x:

x Year	y Tuition cost ($)
2016	10,900
2017	11,000
2018	11,200
2019	11,200
2020	11,300

Source: James Stewart, Calculus: Early Transcendentals [9e]
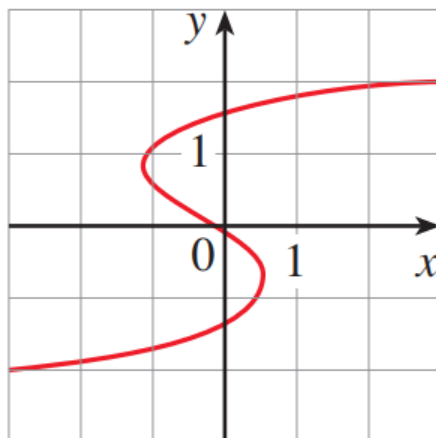
Solution

True

Problem 15

Determine whether the curve is the graph of a function of x. If it is, state the domain and range of the function
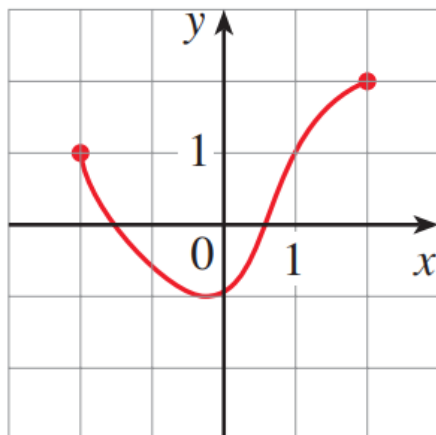
Solution

False

Source: James Stewart, Calculus: Early Transcendentals [9e]

Problem 16

Determine whether the curve is the graph of a function of x. If it is, state the domain and range of the function

Source: James Stewart, Calculus: Early Transcendentals [9e]
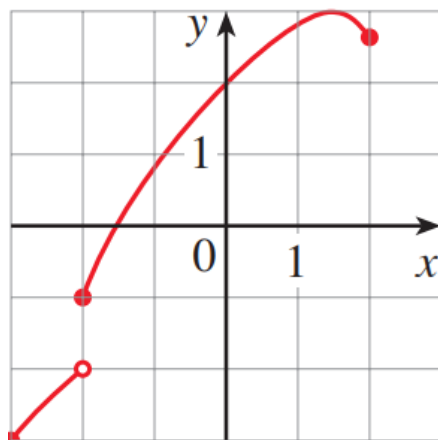
Solution

Domain : $[-2, 2]$ Range : $[-1, 2]$

Problem 17

Determine whether the curve is the graph of a function of x. If it is, state the domain and range of the function
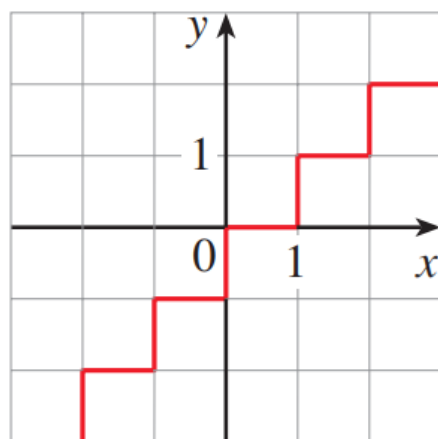
Solution

Domain : $[-3, 2]$ Range : $[-3, 3]$

Source: James Stewart, Calculus: Early Transcendentals [9e]

Problem 18

Determine whether the curve is the graph of a function of x. If it is, state the domain and range of the function

Source: James Stewart, Calculus: Early Transcendentals [9e]
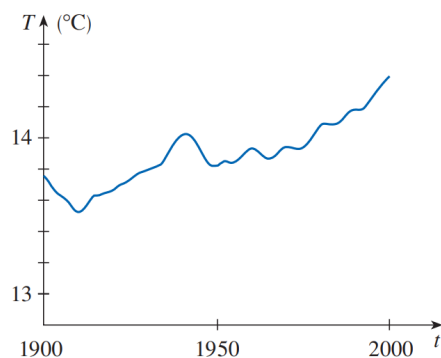
Solution

False

Problem 19

Shown is a graph of the global average temperature T during the 20th century. Estimate the following:

1. *The global average temperature in 1950*

   Solution

   ≈ 13.82

Source: James Stewart, Calculus: Early Transcendentals [9e]

2. *The year when the average temperature was* $14.2°C$

   Solution

   ≈ 1992

3. *The years when the temperature was smallest and largest*

   Solution
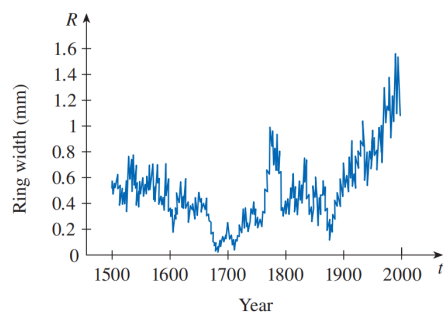
   1910   and   2003

4. *The range of T*

   Solution

   $[13.5, 14.4]$

Problem 20

Trees grow faster and form wider rings in warm years and grow more slowly and form narrower rings in cooler years. The figure shows ring widths of a Siberian pine from 1500 to 2000.

Source: James Stewart, Calculus: Early Transcendentals [9e]

1. *What is the range of the ring width function?*

Solution

$[0.1, 1.6]$ (mm)

2. *What does the graph tend to say about the temperature of the earth? Does the graph reflect the volcanic eruptions of the mid-19th century?*

   Solution

   The graph tends to say that the temperature of the earth is increasing. And it also reflects the volcanic eruptions of the mid-19th century.

Problem 21

You put some ice cubes in a glass, fill the glass with cold water, and then let the glass sit on a table. Describe how the temperature of the water changes as time passes. Then sketch a rough graph of the temperature of the water as a function of the elapsed time.

Solution

Problem 22

You place a frozen pie in an oven and bake it for an hour. Then you take it out and let it cool. Describe how the temperature of the pie changes as time passes. Then sketch a rough graph of the temperature of the pie as a function of time.

Solution

Problem 23

The graph shows the power consumption for a day in September in San Francisco. (P is measured in megawatts; t is measured in hours starting at midnight.)
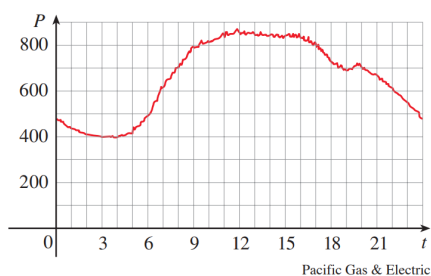
Source: James Stewart, Calculus: Early Transcendentals [9e]

1. *What was the power consumption at 6 AM? At 6 PM?*

Solution

The power consumption at 6 AM is 500 (MW), and at 6 PM is 720 (MW).

2. *When was the power consumption the lowest? When was it the highest? Do these times seem reasonable?*

Solution

The power consumption is lowest at 3 AM and is highest at midday. And it is reasonable.

Problem 24

Three runners compete in a 100-meter race. The graph depicts the distance run as a function of time for each runner. Describe in words what the graph tells you about this race. Who won the race? Did each runner finish the race?
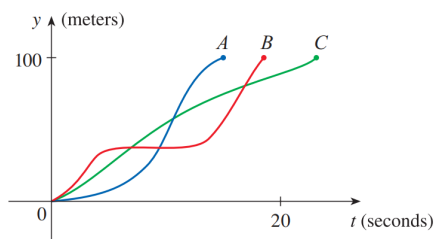
Source: James Stewart, Calculus: Early Transcendentals [9e]

Solution

The graph shows that A, B, and C both finished the race, and A won. A started with the lowest speed but finished the race earliest.

Problem 25

Sketch a rough graph of the outdoor temperature as a function of time during a typical spring day.

Solution

Problem 26

Sketch a rough graph of the number of hours of daylight as a function of the time of year.

Solution

Problem 27

Sketch a rough graph of the amount of a particular brand of coffee sold by a store as a function of the price of the coffee.

Solution

Problem 28

Sketch a rough graph of the market value of a new car as a function of time for a period of 20 years. Assume the car is well maintained.

Solution

Problem 29

A homeowner mows the lawn every Wednesday afternoon. Sketch a rough graph of the height of the grass as a function of time over the course of a four-week period.

Solution

Problem 30

An airplane takes off from an airport and lands an hour later at another airport, 400 miles away. If t represents the time in minutes since the plane has left the terminal building, let $x(t)$ be the horizontal distance traveled and $y(t)$ be the altitude of the plane.

1. *Sketch a possible graph of $x(t)$*

   Solution

2. *Sketch a possible graph of $y(t)$*

   Solution

3. *Sketch a possible graph of the ground speed*

   Solution

4. *Sketch a possible graph of the vertical velocity*

   Solution

Problem 31

Temperature readings T (in $°F$) were recorded every two hours from midnight to 2:00 PM in Atlanta on a day in June. The time t was measured in hours from midnight.

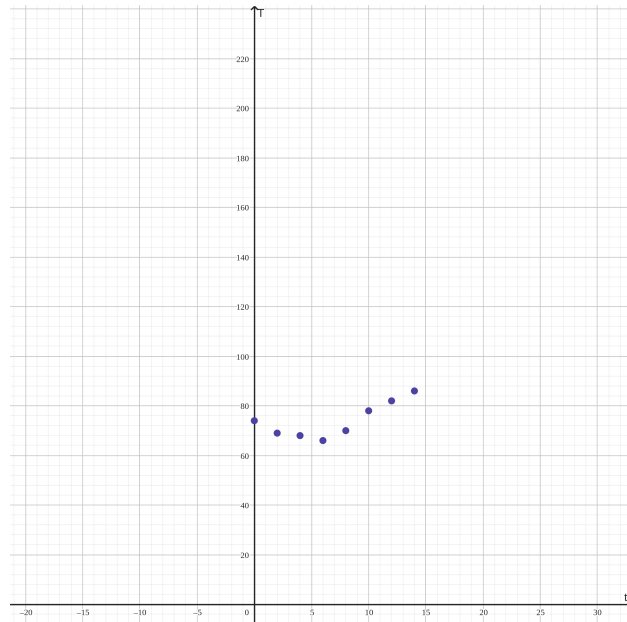| t	0	2	4	6	8	10	12	14
T	23	21	20	19	21	26	28	30

Source: James Stewart, Calculus: Early Transcendentals [9e]

1. *Use the readings to sketch a rough graph of T as a function of t*
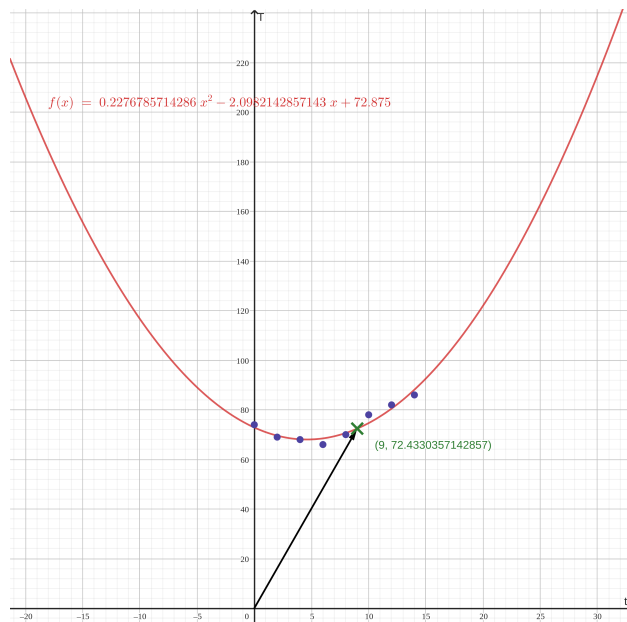
Solution

We can use a quadratic function to fit those points.

2. *Use your graph to estimate the temperature at 9:00 AM*
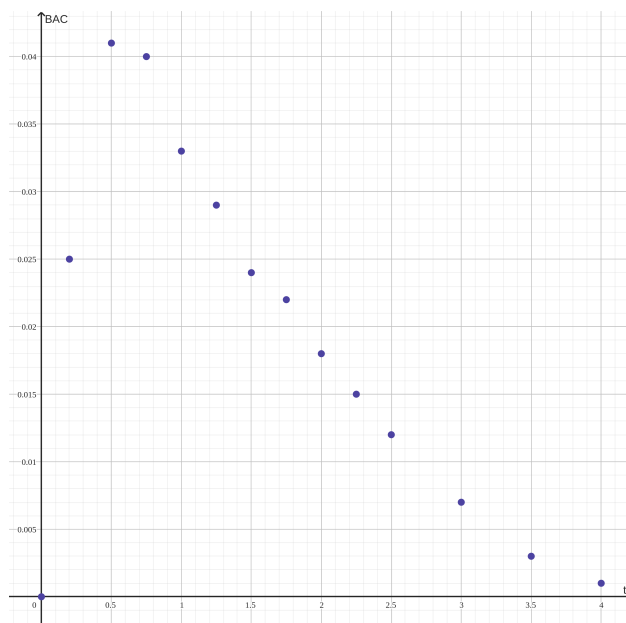
Solution

$\approx 72.4°F$

Problem 32

Researchers measured the blood alcohol concentration(BAC) of eight adult male subjects after rapid consumption 30 mL of ethanol (corresponding to two standard alcoholic drinks). The table shows the data they obtained by averaging the BAC (in g/dL) of the eight men.

t (hours)	BAC	t (hours)	BAC
0	0	1.75	0.022
0.2	0.025	2.0	0.018
0.5	0.041	2.25	0.015
0.75	0.040	2.5	0.012
1.0	0.033	3.0	0.007
1.25	0.029	3.5	0.003
1.5	0.024	4.0	0.001

Source: James Stewart, Calculus: Early Transcendentals [9e]

1. *Use the readings to sketch a rough graph of BAC as a function of t*

   Solution

2. *Use your graph to describe how the effect of alcohol varies with time*

   Solution

   The BAC value increases from 0 (g/dL) to the maximum of 0.041 (g/dL) before it decreases to 0.001 (g/dL) 4 hours after consuming 30 mL of ethanol.

Problem 33

If $f(x) = 3x^2 - x + 2$, find $f(2)$, $f(-2)$, $f(a)$, $f(-a)$, $f(a+1)$, $2f(a)$, $f(2a)$, $f(a^2)$, $[f(a)]^2$, and $f(a+h)$.

Solution

1. $f(2) = 3(2)^2 - 2 + 2 = 12$

2. $f(2) = 3(-2)^2 - (-2) + 2 = 16$

3. $f(a) = 3a^2 - a + 2$

4. $f(a) = 3(-a)^2 - (-a) + 2 = 3a^2 + a + 2$

5. $f(a+1) = 3(a+1)^2 - (a+1) + 2 = 3(a^2 + 2a + 1) - a - 1 + 2 = 3a^2 + 5a + 4$

6. $2f(a) = 2(3a^2 - a + 2) = 6a^2 - 2a + 4$

7. $f(2a) = 3(2a)^2 - (2a) + 2 = 12a^2 - 2a + 2$

8. $f(a^2) = 3(a^2)^2 - (a^2) + 2 = 3a^4 - a^2 + 2$

9. $[f(a)]^2 = (3a^2 - a + 2)^2 = 9a^4 + a^2 + 4 + 2(3a^2)(-a) + 2(-a)2 + 2(3a^2)2 = 9a^4 - 6a^3 + 13a^3 - 4a + 4$

10. $f(a+h) = 3(a+h)^2 - (a+h) + 2 = 3(a^2 + 2ah + h^2) - a - h + 2 = 3a^2 + 3h^2 + 6ah - a - h + 2$

Problem 34

If $g(x) = \frac{x}{\sqrt{x+1}}$, find $g(0)$, $g(3)$, $5g(a)$, $\frac{1}{2}g(4a)$, $g(a^2)$, $[g(a)]^2$, $g(a+h)$, and $g(x-a)$.

Solution

1. $g(0) = \frac{0}{\sqrt{0+1}} = 0$

2. $g(3) = \frac{3}{\sqrt{3+1}} = \frac{3}{2}$

3. $5g(a) = 5\frac{a}{\sqrt{a+1}} = \frac{5a}{\sqrt{a+1}}$

4. $\frac{1}{2}g(4a) = \frac{1}{2}\frac{4a}{\sqrt{4a+1}} = \frac{2a}{\sqrt{4a+1}}$

5. $g(a^2) = \frac{a^2}{\sqrt{a^2+1}}$

6. $[g(a)]^2 = (\frac{a}{\sqrt{a+1}})^2 = \frac{a^2}{a+1}$

7. $g(a+h) = \frac{a+h}{\sqrt{a+h+1}}$

8. $g(x-a) = \frac{x-a}{\sqrt{x-a+1}}$

Problem 35

Evaluate the difference quotient for the given function. Simplify your answer.

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

Solution

$$\frac{f(3+h) - f(3)}{h} = \frac{[4 + 3(3+h) - (3+h)^2] - [4 + 3(3) - 3^2]}{h}$$

$$= \frac{-h^2 - 3h}{h} = -h - 3$$

Problem 36

Evaluate the difference quotient for the given function. Simplify your answer.

$$f(x) = x^3 \qquad \frac{f(a+h) - f(a)}{h}$$

Solution

$$\frac{f(a+h) - f(a)}{h} = \frac{(a+h)^3 - a^3}{h} = \frac{3a^2h + 3ah^2 + h^3}{h} = 3a^2 + 3ah + h^2$$

Problem 37

Evaluate the difference quotient for the given function. Simplify your answer.

$$f(x) = \frac{1}{x} \qquad \frac{f(x) - f(a)}{x - a}$$

Solution

$$\frac{f(x) - f(a)}{x - a} = \frac{\frac{1}{x} - \frac{1}{a}}{x - a} = \frac{-1}{ax}$$

Problem 38

Evaluate the difference quotient for the given function. Simplify your answer.

$$f(x) = \sqrt{x + 2} \qquad \frac{f(x) - f(1)}{x - 1}$$

Solution

$$\frac{f(x) - f(1)}{x - 1} = \frac{\sqrt{x + 2} - \sqrt{1 + 2}}{x - 1} = \frac{\sqrt{x + 2} - \sqrt{3}}{x - 1}$$

Problem 39

Find the domain of the function

$$f(x) = \frac{x+4}{x^2 - 9}$$

Solution

$$x^2 - 9 \neq 0 \Rightarrow x \neq \pm 3$$

Problem 40

Find the domain of the function

$$f(x) = \frac{x^2 + 1}{x^2 + 4x - 21}$$

Solution

$$x^2 + 4x - 21 \neq 0 \Rightarrow (x+7)(x-3) \neq 0 \Rightarrow \begin{cases} x \neq -7 \\ x \neq 3 \end{cases}$$

Problem 41

Find the domain of the function

$$f(t) = \sqrt[3]{2t - 1}$$

Solution

$$[-\infty, \infty]$$

Problem 42

Find the domain of the function

$$g(t) = \sqrt{3 - t} - \sqrt{2 + t}$$

Solution

$$\begin{cases} 3 - t \geq 0 \\ 2 + t \geq 0 \end{cases} \Leftrightarrow \begin{cases} t \leq 3 \\ t \geq -2 \end{cases} \Leftrightarrow t \in [-2, 3]$$

Problem 43

Find the domain of the function

$$h(x) = \frac{1}{\sqrt[4]{x^2 - 5x}}$$

Solution

$$x^2 - 5x > 0 \Rightarrow x(x-5) > 0 \Rightarrow x \in (-\infty, 0) \cup (5, \infty)$$

Problem 44

Find the domain of the function

$$f(u) = \frac{u+1}{1 + \frac{1}{u+1}}$$

Solution

$$\begin{cases} 1 + \frac{1}{u+1} \neq 0 \\ u + 1 \neq 0 \end{cases} \Leftrightarrow \begin{cases} u \neq -2 \\ u \neq -1 \end{cases}$$

Problem 45

Find the domain of the function

$$F(p) = \sqrt{2 - \sqrt{p}}$$

Solution

$$\begin{cases} 2 - \sqrt{p} \geq 0 \\ p \geq 0 \end{cases} \Leftrightarrow 0 \leq p \leq 4$$

Problem 46

Find the domain of the function

$$h(x) = \sqrt{x^2 - 4x - 5}$$

Solution

$$x^2 - 4x - 5 \geq 0 \Leftrightarrow (x - 5)(x + 1) \geq 0 \Rightarrow x \in (-\infty, -1] \cup [5, \infty)$$

Problem 47

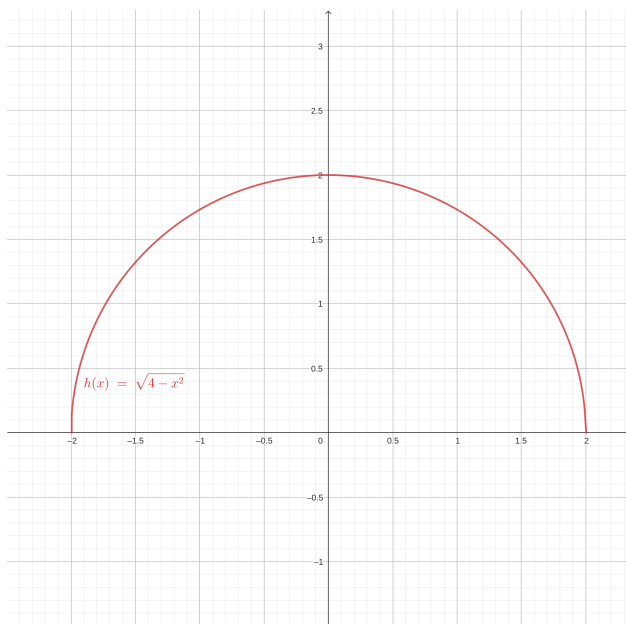*Find the domain and range and sketch the graph of the function*

$$h(x) = \sqrt{4 - x^2}$$

Solution

Domain:

$$4 - x^2 \leq 0 \Rightarrow x \in [-2, 3]$$

Range:

$$0 \leq h(x) = \sqrt{4 - x^2} < \sqrt{4} = 2 \Rightarrow h(x) \in [0, 2]$$

$h(x) = \sqrt{4 - x^2}$

Problem 48

Find the domain and sketch the graph of the function

$$f(x) = \frac{x^2 - 4}{x - 2}$$

Solution

Domain:

$$x - 2 \neq 0 \Rightarrow x \neq 2 \Rightarrow x \in (-\infty, 2) \cup (2, \infty)$$

Range:

$$f(x) = \frac{x^2 - 4}{x - 2} = x + 2 \Rightarrow f(x) \in (-\infty, \infty)$$
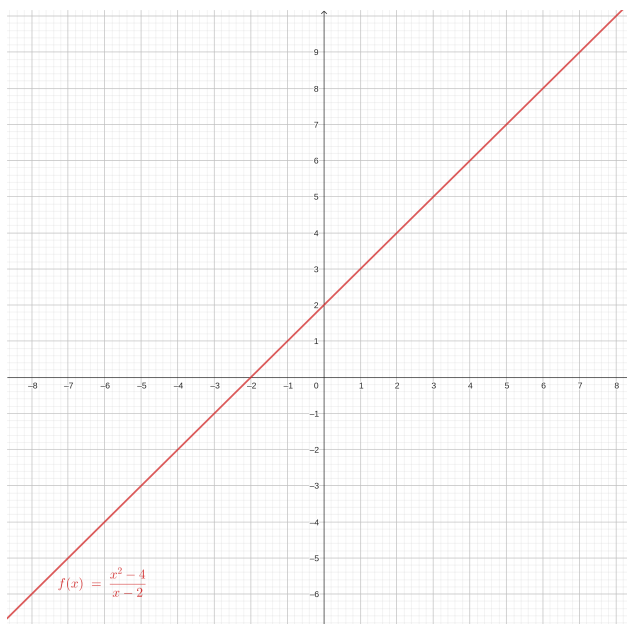
Problem 49

Evaluate $f(-3)$, $f(0)$, and $f(2)$ for the piecewise defined function. Then sketch the graph of the function

$$f(x) = \begin{cases} x^2 + 2 & \text{if } x < 0 \\ x & \text{if } x \geq 0 \end{cases} \tag{1}$$

Solution

1. $f(-3) = (-3)^2 + 2 = 11$

2. $f(0) = 0$

3. $f(2) = 0$

19

$f(x) = \frac{x^2 - 4}{x - 2}$

Problem 50

Evaluate $f(-3)$, $f(0)$, and $f(2)$ for the piecewise defined function. Then sketch the graph of the function

$$f(x) = \begin{cases} 5 & \text{if } x < 2 \\ \frac{1}{2}x - 3 & \text{if } x \geq 2 \end{cases} \tag{2}$$

Solution

1. $f(-3) = 5$

2. $f(0) = 5$

3. $f(2) = \frac{1}{2}(2) - 3 = -2$

Problem 51

Evaluate $f(-3)$, $f(0)$, and $f(2)$ for the piecewise defined function. Then sketch the graph of the function

$$f(x) = \begin{cases} x + 1 & \text{if } x \leq -1 \\ x^2 & \text{if } x > -1 \end{cases} \tag{3}$$

Solution

1. $f(-3) = (-3) + 1 = -2$

2. $f(0) = 0^2 = 0$

3. $f(2) = 2^2 = 4$

Problem 52

Evaluate $f(-3)$, $f(0)$, and $f(2)$ for the piecewise defined function. Then sketch the graph of the function

$$f(x) = \begin{cases} -1 & \text{if } x \leq 1 \\ 7 - 2x & \text{if } x > 1 \end{cases} \tag{4}$$

Solution

1. $f(-3) = -1$

2. $f(0) = -1$

3. $f(2) = 7 - 2(2) = 3$

Problem 53

Sketch the graph of the function

$$f(x) = x + |x|$$

Solution

Problem 54

Sketch the graph of the function

$$f(x) = |x + 2|$$

Solution

Problem 55

Sketch the graph of the function

$$g(t) = |1 - 3t|$$

Solution

Problem 56

Sketch the graph of the function

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

Solution

Problem 57

Sketch the graph of the function

$$f(x) = \begin{cases} |x| & \text{if } |x| \leq 1 \\ 1 & \text{if } |x| > 1 \end{cases} \tag{5}$$

Solution

Problem 58

Sketch the graph of the function
$$g(x) = ||x| - 1|$$

Solution

Problem 59

Find a formula for the function whose graph is the given curve. The line segment joining the points $(1, -3)$ *and* $(5, 7)$

Solution

Problem 60

Find a formula for the function whose graph is the given curve. The line segment joining the points $(-5, 10)$ *and* $(7, -10)$

Solution

Problem 61

Find a formula for the function whose graph is the given curve. The bottom half of the parabola
$$x + (y - 1)^2 = 0$$

Solution

Problem 62

Find a formula for the function whose graph is the given curve. The top half of the circle
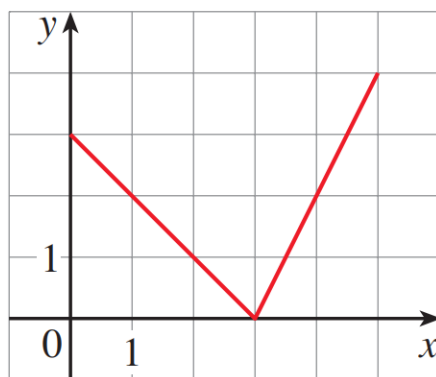$$x^2 + (y - 2)^2 = 4$$

Solution

Problem 63

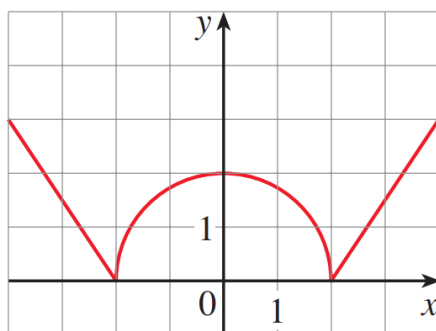*Find a formula for the function whose graph is the given curve.*

Solution

Problem 64

Find a formula for the function whose graph is the given curve.

Source: James Stewart, Calculus: Early Transcendentals [9e]

Source: James Stewart, Calculus: Early Transcendentals [9e]

Solution

Problem 65

Find a formula for the described function and state its domain. A rectangle has perimeter 20 m. Express the area of the rectangle as a function of the length of one of its sides.

Solution

Problem 66

Find a formula for the described function and state its domain. A rectangle has area 16 m^2. Express the perimeter of the rectangle as a function of the length of one of its sides.

Solution

Problem 67

Find a formula for the described function and state its domain. Express the area of an equilateral triangle as a function of the length of a side.

Solution

Problem 68

Find a formula for the described function and state its domain. A closed rectangular box with volume 8 ft^3 has length twice the width. Express the height of the box as a function of the width.
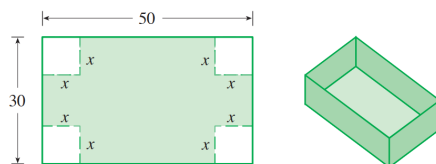
Solution

Problem 69

Find a formula for the described function and state its domain. An open rectangular box with volume 2 m^3 has a square base. Express the surface area of the box as a function of the length of a side of the base.

Solution

Problem 70

Find a formula for the described function and state its domain. A right circular cylinder has volume 25 in^3. Express the radius of the cylinder as a function of the height.

Solution

Problem 71

A box with an open top is to be constructed from a rectangular piece of cardboard with dimensions 12 in. by 20 in by cutting out equal squares of side x at each corner and then folding up the sides as in the figure. Express the volume V of the box as a function of x.

Source: James Stewart, Calculus: Early Transcendentals [9e]

Solution

Problem 72

A Norman window has the shape of a rectangle surmounted by a semicircle. If the perimeter of the window is 30 ft, express the area A of the window as a function of the width x of the window.

Source: James Stewart, Calculus: Early Transcendentals [9e]

Solution

Problem 73

In a certain state the maximum speed permitted on freeways is 65 mi/h and the minimum speed is 40 mi/h. The fine for violating these limits is $15 for every mile per hour above the maximum speed or below the minimum speed. Express the amount of the fine F as a function of the driving speed x and graph F(x) for $0 \leq x \leq 100$.

Solution

Problem 74

An electricity company charges its customers a base rate of $10 a month, plus 6 cents per kilowatt-hour (kWh) for the first 1200 kWh and 7 cents per kWh for all usage over 1200 kWh. Express the month cost E as a function of the amount x of electricity used. Then graph the function E for $0 \leq x \leq 2000$.

Solution

Problem 75

In a certain country, income tax is assessed as follows. There is no tax on income up to $10,000. Any income over $10,000 is taxed at a rate of 10%, up to an income of $20,000. Any income over $20,000 is taxed at 15%.

1. *Sketch the graph of the tax rate R as a function of the income I*

   Solution

2. *How much tax is assessed on an income of $14,000? On $26,000?*

   Solution

3. *Sketch the graph of the total assessed tax T as a function of the income I*

   Solution

Solution

Problem 76

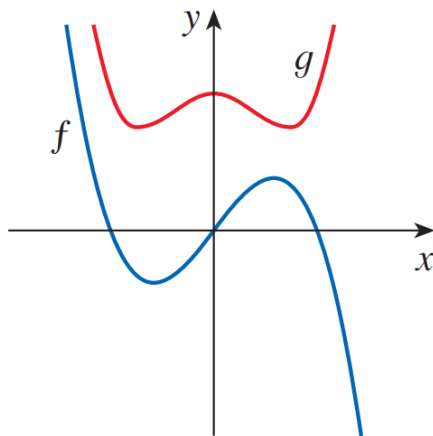1. *If the point (5, 3) is on the graph of an even function, what other point must also be on the graph?*

   Solution

2. *If the point (5, 3) is on the graph of an odd function, what other point must also be on the graph?*

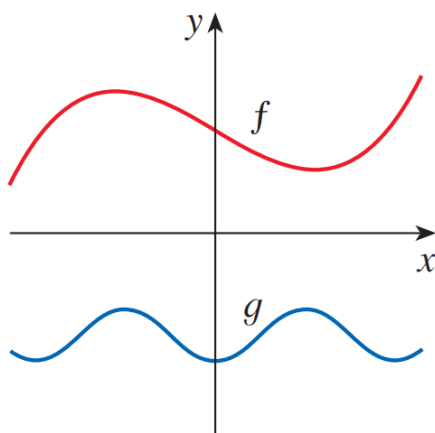   **Solution**

Solution

Problem 77

Graphs of f and g are shown. Decide whether each function is even, odd, or neither. Explain your reasoning.

Source: James Stewart, Calculus: Early Transcendentals [9e]
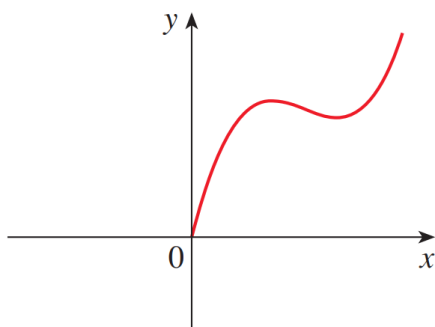
Solution

Problem 78

Graphs of f and g are shown. Decide whether each function is even, odd, or neither. Explain your reasoning.

Source: James Stewart, Calculus: Early Transcendentals [9e]

Solution

Problem 79

The graph of a function defined for $x \geq 0$ is given. Complete the graph for $x < 0$ to make (a) an even function and (b) an odd function.

Source: James Stewart, Calculus: Early Transcendentals [9e]
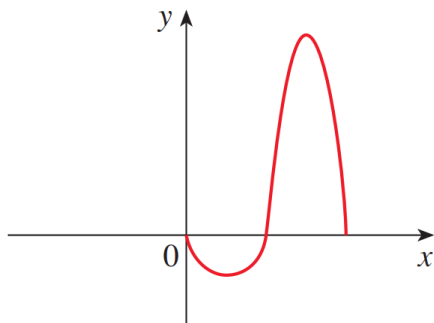
Solution

Problem 80

The graph of a function defined for $x \geq 0$ is given. Complete the graph for $x < 0$ to make (a) an even function and (b) an odd function.

Source: James Stewart, Calculus: Early Transcendentals [9e]

Solution

Problem 81

Determine whether f is even, odd, or neither. You may wish to use a graphing calculator or computer to check your answer visually

$$f(x) = \frac{x}{x^2 + 1}$$

Solution

Problem 82

Determine whether f is even, odd, or neither. You may wish to use a graphing calculator or computer to check your answer visually

$$f(x) = \frac{x^2}{x^4 + 1}$$

Solution

Problem 83

Determine whether f is even, odd, or neither. You may wish to use a graphing calculator or computer to check your answer visually

$$f(x) = \frac{x}{x + 1}$$

Solution

Problem 84

Determine whether f is even, odd, or neither. You may wish to use a graphing calculator or computer to check your answer visually

$$f(x) = x|x|$$

Solution

Problem 85

Determine whether f is even, odd, or neither. You may wish to use a graphing calculator or computer to check your answer visually

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

Solution

Problem 86

Determine whether f is even, odd, or neither. You may wish to use a graphing calculator or computer to check your answer visually

$$f(x) = 1 + 3x^3 - x^5$$

Solution

Problem 87

If f and g are both even functions, is f + g even? If f and g are both odd functions, is f + g odd? What if f is even and g is odd? Justify your answers.

Solution

Problem 88

If f and g are both even functions, is the product fg even? If f and g are both odd functions, is fg odd? What if f is even and g is odd? Justify your answers.

Solution