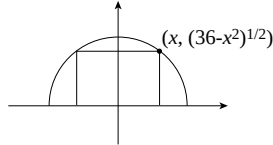


This print-out should have 143 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 (part 1 of 2) 10.0 points

A rectangle is bounded by the x -axis and the semicircle $y = \sqrt{36 - x^2}$.



Write the area of the rectangle as a function of x .

1. $A = 2x\sqrt{36 - x^2}$
2. None of these
3. $A = \sqrt{x(36 - x^2)}$
4. $A = \frac{\pi}{2}(36 - x^2)$
5. $A = x\sqrt{36 - x^2}$

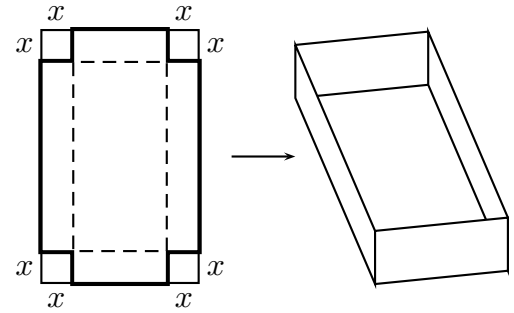
002 (part 2 of 2) 10.0 points

Determine the domain of the function.

1. $(0, 36)$
2. All real numbers except ± 6
3. $(0, 6)$
4. None of these
5. $(0, \infty)$
6. $(-\infty, \infty)$

003 (part 1 of 2) 10.0 points

An open box is made from an 12 inch $\times$ 15 inch rectangular piece of cardboard by cutting equal squares from the corners and turning up the sides as shown in the figure



Determine the volume V of the box as a function of x .

1. $V(x) = 180x - 54x^2 + 4x^3$
2. $V(x) = 180x - 54x^2 + 2x^3$
3. $V(x) = 360x - 54x^2 + 4x^3$
4. $V(x) = 180x - 54x^2 - 4x^3$
5. $V(x) = 180x + 54x^2 + 4x^3$

004 (part 2 of 2) 10.0 points

What is the domain of V for a box that makes physical sense?

1. domain = $(0, 7)$
2. domain = $[0, 6)$
3. domain = $(0, 6]$
4. domain = $(0, 12)$
5. domain = $(0, 6)$

005 10.0 points

Find the natural domain of the function

$$g(u) = \sqrt{u} - \sqrt{4 - u}.$$

1. nat. domain = $(0, 4]$
2. nat. domain = $[0, 4]$
3. nat. domain = $(0, 4)$

4. nat. domain = $[0, 4)$

5. nat. domain = $[0, \infty)$

006 10.0 points

Find the domain of the function

$$f(t) = \sqrt[3]{t+7} - 8.$$

1. $(7, \infty)$

2. $(-\infty, 0)$

3. $(0, \infty)$

4. $(-\infty, \infty)$

5. None of these

6. $(-7, 7)$

007 10.0 points

Find the domain of the function

$$f(s) = \frac{\sqrt{s-6}}{s-14}.$$

1. All real numbers except 14

2. $s \geq 6, s \neq 14$

3. All real numbers except 6 and 14

4. $s \geq 6$

5. All real numbers

008 10.0 points

Which, if any, of the following functions have domain $(-\infty, \infty)$?

A. $f(x) = \frac{x}{x^2 - 16}$

B. $f(x) = \sqrt{x-1}$

C. $f(x) = |x|$

1. A and C only

2. A and B only

3. C only

4. B and C only

5. A only

6. B only

7. none of them

8. all of them

009 (part 1 of 2) 10.0 points

Determine the natural domain of the function

$$f(x) = \sqrt{10 + 3x - x^2}.$$

1. domain = $(-2, 5)$

2. domain = $(-\infty, -2) \cup (5, \infty)$

3. domain = $[-2, 5]$

4. domain = $(-\infty, -5] \cup [2, \infty)$

5. domain = $(-\infty, -2] \cup [5, \infty)$

010 (part 2 of 2) 10.0 points

Determine the natural domain of the function

$$g(x) = \frac{1}{\sqrt{x^2 + 3x - 10}}.$$

1. domain = $(-\infty, -2) \cup (5, \infty)$

2. domain = $[-2, 5]$

3. domain = $(-5, 2)$

4. domain = $(-\infty, -5) \cup (2, \infty)$

5. domain = $(-\infty, -5] \cup [2, \infty)$

011 (part 1 of 3) 10.0 points

Consider the function

$$g(x) = x^{3/4}$$

Find $g(16)$.

012 (part 2 of 3) 10.0 points

Find $g(t+16)$.

1. $g(t+16) = (t+16)^{3/4}$

2. $g(t+16) = 16$

3. $g(t+16) = t^{3/4} + 8$

4. $g(t+16) = 2$

5. $g(t+16) = t^{3/4} + 16$

6. $g(t+16) = 8$

7. $g(t+16) = t^{3/4} + 2$

013 (part 3 of 3) 10.0 points

Find $\frac{g(16) - g(81)}{16 - 81}$.

014 10.0 points

At Memorial Hospital there were 608 births in 1987. In 1992, there were 644 births.

Find the average rate of change.

Answer in units of births/year.

015 10.0 points

Find

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

for $f(x) = 4x^3$.

1. $12x^2 + 12xh + 4h^2$

2. $48x^2 + 48xh + 12h^2$

3. $4x^2 - 12xh + 4h^2$

4. $12x^2h + 12xh^2 + 4h^3$

5. $12x^2 + 12xh - 4h^2$

6. $4x^2 - 12xh - 4h^2$

7. None of these

016 10.0 points

Find

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

for $f(x) = \sqrt{5x}$.

1. $\sqrt{5(x+h)} + \sqrt{5x}$

2. $\frac{3}{\sqrt{5(x+h)} + \sqrt{5x}}$

3. None of these

4. $\frac{\sqrt{5(x+h)} - \sqrt{5x}}{\sqrt{5(x+h)} + \sqrt{5x}}$

5. $\frac{1}{\sqrt{5(x+h)} - \sqrt{5x}}$

6. $\frac{5h}{\sqrt{5(x+h)} + \sqrt{5x}}$

7. $\frac{1}{\sqrt{5(x+h)}}$

017 10.0 points

Find

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

for $f(x) = \frac{7}{x}$.

1. $\frac{-7}{x(x+h)}$

2. $\frac{7}{x}$

3. $\frac{7}{x+h}$

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

5. $\frac{7}{x(x+h)}$

6. 1

7. None of these

018 10.0 points

If the point $(12, 15)$ is on the graph of an even function, what other point must also be on the graph?

1. $(-12, -15)$ 2. $(-15, 12)$ 3. $(-12, 15)$ 4. $(12, -15)$ 5. $(15, 12)$

019 10.0 points

Determine which of the following functions is even.

1. $f(x) = x^3 - 7x$ 2. $f(x) = 5x^{-3}$ 3. $f(x) = 2x^{-2}$ 4. $f(x) = 2x^3 + 7x^2 + 5$ 5. $f(x) = x^5 - 5x^3$

020 10.0 points

Determine whether the function defined by

$$f(x) = 2\sqrt[3]{x}$$

is even, odd, or neither.

1. odd

2. even

3. neither

021 10.0 points

Determine whether the function f given by

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

is even, odd, or neither.

1. neither

2. even

3. odd

022 10.0 points

Determine whether the function f defined by

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

is even, odd, or neither.

1. even

2. neither

3. odd

023 (part 1 of 4) 10.0 points

Answer the following questions for the function

$$f(x) = \frac{10x^2 - 7}{x^4 + 2}.$$

(a) Does the point $(-1, \frac{2}{3})$ lie on the graph of f ?

1. No

2. Yes

024 (part 2 of 4) 10.0 points

(b) Find the largest value of x such that $f(x) = 1$.

025 (part 3 of 4) 10.0 points

(c) List all the x -intercepts, if any, of the graph of f .

1. no x -intercepts

2. x -intercept = $\frac{\sqrt{7}}{\sqrt{10}}$

3. x -intercept = $-\frac{7}{2}$

4. x -intercept = $-\frac{\sqrt{7}}{\sqrt{10}}$

5. x -intercept = $\frac{7}{2}$

6. x -intercepts = $\pm \frac{\sqrt{7}}{\sqrt{10}}$

026 (part 4 of 4) 10.0 points

(d) List the y -intercept, if there is one, of the graph of f .

1. no y -intercept

2. y -intercept = $\frac{7}{2}$

3. y -intercept = $\frac{\sqrt{7}}{\sqrt{10}}$

4. y -intercept = $-\frac{7}{2}$

5. y -intercept = $-\frac{\sqrt{7}}{\sqrt{10}}$

027 10.0 points

Find the intercepts for

$$y = x^2 \sqrt{25 - x^2} .$$

1. (5,0), (-5,0) and (0,0)

2. (5,0), (-5,0) and (0,5)

3. (5,0) and (0,5)

4. None of these

5. (-5,0) and (0,0)

6. (5,0) and (0,0)

028 10.0 points

Find the function g that is finally graphed after the following transformations are applied in the order given to the graph of a function f :

- (1) reflect about the x -axis;
- (2) shift down 3 units;
- (3) stretch vertically by a factor 8;
- (4) reflect about the y -axis.

1. $g(x) = 24 + 8f(-x)$

2. $g(x) = 24 - 8f(x)$

3. $g(x) = -24 - 8f(-x)$

4. $g(x) = 24 - 3f(-x)$

5. $g(x) = 8f(x) - 24$

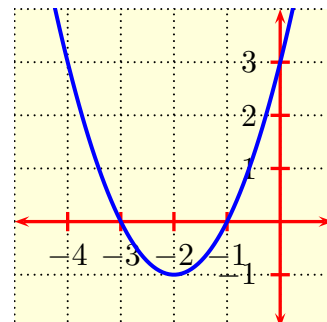
029 10.0 points

Which of the following is the graph of

$$y = 2 - f(x + 1)$$

when $f(x) = x^2$?

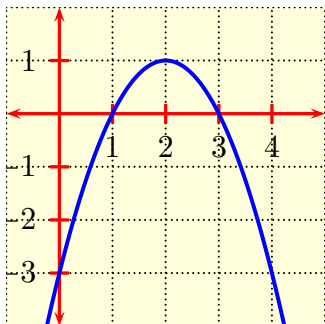
1.



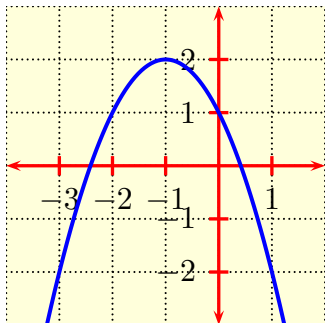
If $f(x) = x^3$, which one of the following is the graph of the function g defined by

$$g(x) = 2f(x+2) - 1?$$

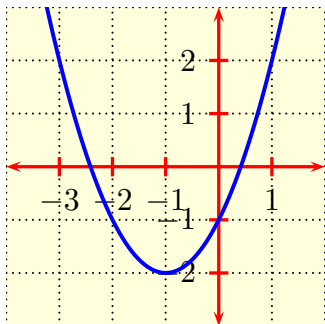
2.



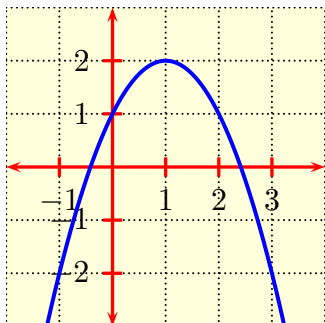
3.



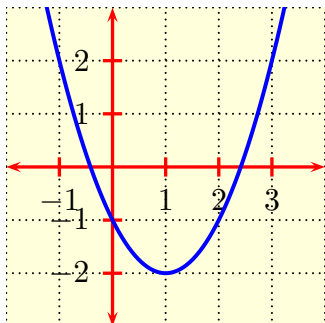
4.



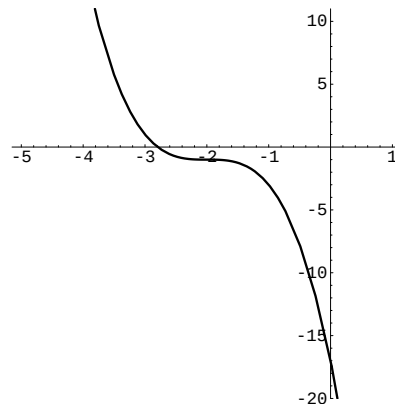
5.



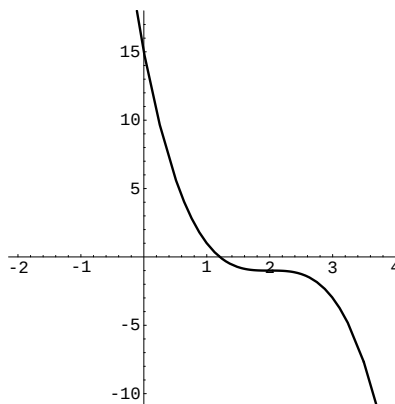
6.



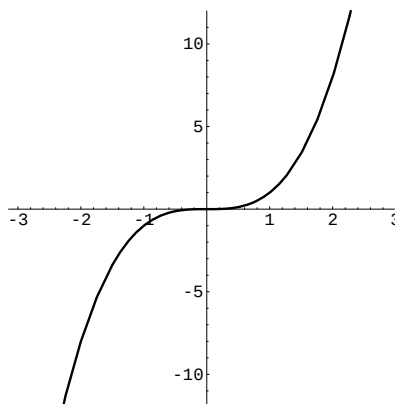
1.



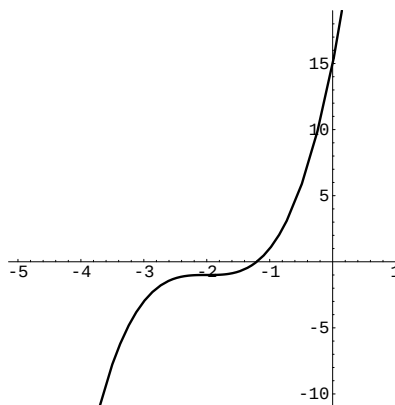
2.



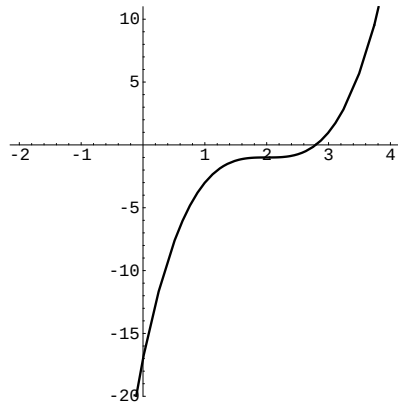
3.



4.



5.

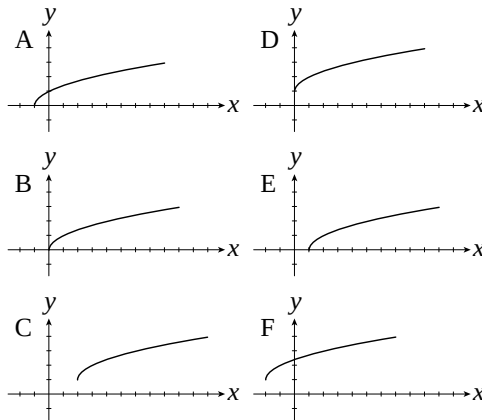


031 (part 1 of 3) 10.0 points

Consider the graph of

$$f(x) = \sqrt{x}$$

and the following transformations



Sketch the graph of

a) $f(x) = \sqrt{x}$

1. D
2. None of these
3. B
4. C
5. F
6. A
7. E

032 (part 2 of 3) 10.0 points

b) $g(x) = \sqrt{x+1}$

1. None of these
2. E
3. D
4. B
5. A
6. F
7. C

033 (part 3 of 3) 10.0 points

c) $h(x) = \sqrt{x-2} + 1$

1. B
2. D
3. F
4. E
5. C
6. A
7. None of these

034 10.0 points

Specify the sequence of transformations that will yield the graph of

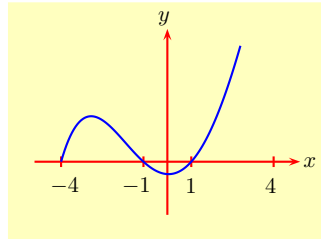
$$g(x) = -(x-4)^3$$

from the graph of the function $f(x) = x^3$.

1. None of these
2. Horizontal shift of four units to the right followed by a reflection over the x -axis.
3. Horizontal shift of four units to the left followed by a reflection over the y -axis.
4. Horizontal shift of four units to the right followed by a reflection over the y -axis.

5. Horizontal shift of four units to the left followed by a reflection over the x -axis.

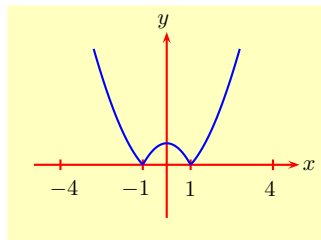
035 10.0 points



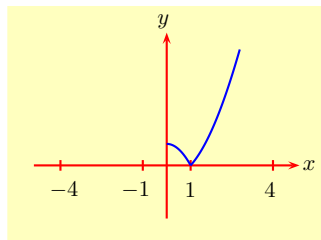
The graph of $y = f(x)$ is shown in the figure above.

Which of the following could be the graph of $y = f(|x|)$?

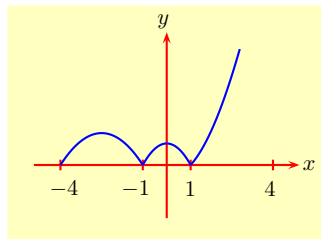
1.



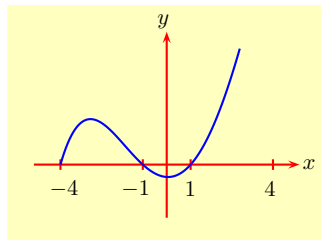
2.



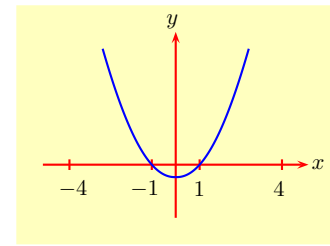
3.



4.

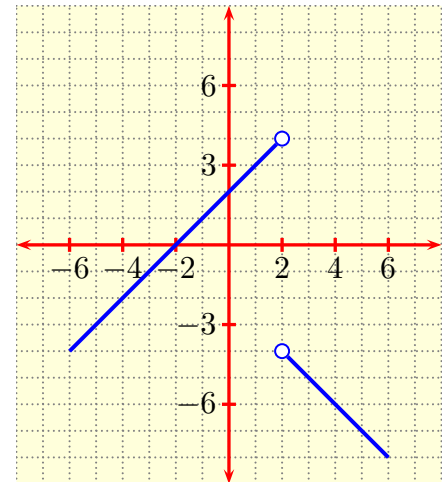


5.



036 10.0 points

Which one of the following functions has



as its graph on $[-6, 6]$?

1. $y = \frac{x^2 - 4}{|x - 2|}, \quad x \neq 2$

2. $y = -\frac{x^2 - 4}{|x - 2|}, \quad x \neq 2$

3. $y = \frac{x^2 - 4}{|x + 2|}, \quad x \neq -2$

4. $y = -\frac{|x^2 - 4|}{x - 2}, \quad x \neq 2$

5. $y = \frac{|x^2 - 4|}{x - 2}, \quad x \neq 2$

6. $y = -\frac{x^2 - 4}{|x + 2|}, \quad x \neq -2$

037 10.0 points

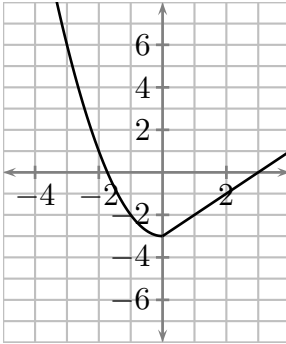
Sketch the graph of

$$f(x) = \begin{cases} x - 3, & x < 0 \\ x^2 - 3, & x \geq 0 \end{cases}$$

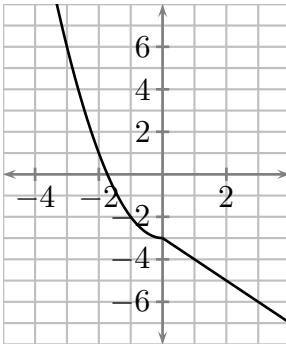
Sketch the graph of

$$f(x) = \begin{cases} x - 4, & x < 3 \\ -x^2 + 3x - 1, & x \geq 3 \end{cases}$$

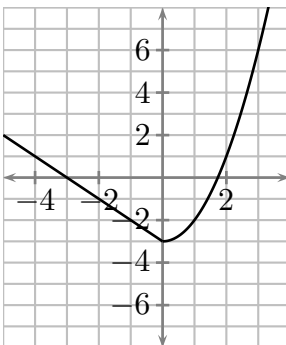
1.



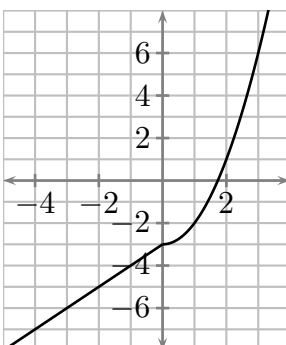
2.



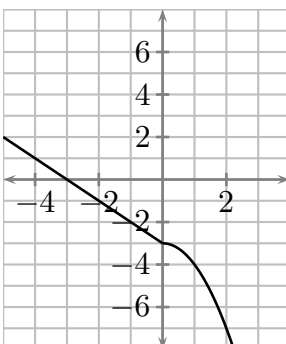
3.



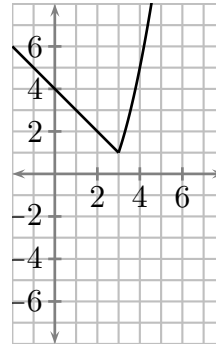
4.



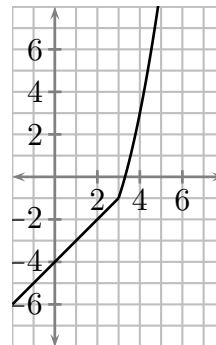
5.



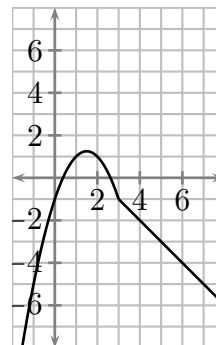
1.



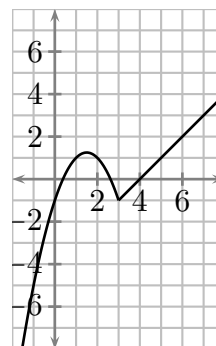
2.

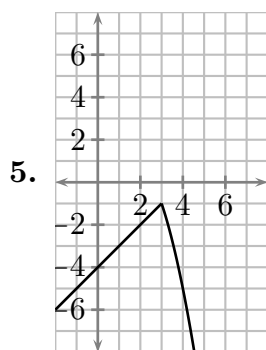


3.



4.





039 10.0 points

By removing absolute values, express

$$f(x) = \frac{x^2 - 9}{|x - 3|}$$

as a piecewise-defined function.

1. $f(x) = \begin{cases} x - 3, & x > 3, \\ 3 - x, & x < 3. \end{cases}$
2. $f(x) = \begin{cases} 3 - x, & x > -3, \\ x - 3, & x < -3. \end{cases}$
3. $f(x) = \begin{cases} -(x + 3), & x > 3, \\ x + 3, & x < 3. \end{cases}$
4. $f(x) = \begin{cases} x + 3, & x > 3, \\ -(x + 3), & x < 3. \end{cases}$
5. $f(x) = \begin{cases} x - 3, & x > -3, \\ 3 - x, & x < -3. \end{cases}$
6. $f(x) = \begin{cases} x + 3, & x > -3, \\ -(x + 3), & x < -3. \end{cases}$

040 (part 1 of 3) 10.0 points

For

$$f(x) = \begin{cases} x^2 + 2 & x \leq 1, \\ 2x^2 + 2 & x > 1, \end{cases}$$

a) find $f(-7.2)$.

041 (part 2 of 3) 10.0 points

b) find $f(1)$.

042 (part 3 of 3) 10.0 points

c) find $f(8.8)$.

043 10.0 points

Determine $f(x) - g(x)$ when

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

and

$$g(x) = 2x^2 - x - 3.$$

1. $f(x) - g(x) = -x^2 - 2x + 4$
2. $f(x) - g(x) = x^2 - 2x + 4$
3. $f(x) - g(x) = -x^2 - 2x - 4$
4. $f(x) - g(x) = x^2 + 2x - 4$
5. none of these
6. $f(x) - g(x) = x^2 + 2x + 4$
7. $f(x) - g(x) = -x^2 + 2x - 4$

044 10.0 points

Simplify as much as possible the expression for the product

$$h = f \cdot g$$

of functions

$$f(x) = x + 3, \quad g(x) = x^2 + 2x - 1.$$

1. $h(x) = x^3 + 5x^2 + 5x - 3$
2. $h(x) = x^3 - 5x^2 - 5x - 3$
3. $h(x) = x^3 + 5x^2 - 5x - 3$
4. $h(x) = x^3 + 5x^2 - 5x + 3$
5. $h(x) = x^3 + 5x^2 + 5x + 3$
6. $h(x) = x^3 - 5x^2 + 5x + 3$

045 10.0 points

What is the composition, $F = f \circ g$, of

$$f(x) = x^2 - 5x - 1, \quad g(x) = x + 1.$$

1. $F(x) = x^3 - 4x^2 - 6x - 1$

2. $F(x) = x^2 - 3x - 5$

3. $F(x) = x^2 - 3x - 7$

4. $F(x) = x^2 - 7x - 5$

5. $F(x) = x^3 + 4x^2 - 7x - 1$

6. $F(x) = x^3 - 7x - 7$

046 (part 1 of 2) 10.0 points

Consider the following equation

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

a) Identify the leading coefficient for standard form.

047 (part 2 of 2) 10.0 points

b) What end behavior does the curve exhibit?

1. Unable to determine.

2. Rises on both sides.

3. Falls on both sides.

4. Falls on the left and rises on the right.

5. Rises on the left and falls on the right.

048 10.0 points

Write the function in completed square form

$$f(x) = 6x^2 - 60x + 11$$

1. $f(x) = 6(x + 5)^2 - 139$

2. $f(x) = 6(x - 5)^2 - 139$

3. $f(x) = 6(x - 5)^2 + 161$

4. None of these

5. $f(x) = 6(x - 5)^2 - 161$

6. $f(x) = 6(x - 5)^2 + 139$

7. $f(x) = 6(x - 5)^2 - 36$

049 10.0 points

Find the x -intercepts of the graph of

$$y = 2x^2 - 7x - 30.$$

1. None of these

2. $\left(-\frac{5}{2}, 0\right), (6, 0)$

3. $(-10, 0), (3, 0)$

4. $(10, 0), (-3, 0)$

5. $\left(\frac{5}{2}, 0\right), (-6, 0)$

050 (part 1 of 3) 10.0 points

a) Find the vertex of

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

1. $\left(-\frac{1}{4}, \frac{9}{8}\right)$

2. None of these

3. $\left(-\frac{1}{4}, \frac{7}{8}\right)$

4. $\left(\frac{1}{4}, \frac{9}{8}\right)$

5. $\left(\frac{1}{4}, \frac{7}{8}\right)$

051 (part 2 of 3) 10.0 points

b) Find its intercepts.

1. None of these

2. $(1, 0), \left(0, \frac{1}{4}\right)$

3. $(1, 0), \left(0, -\frac{1}{4}\right)$

4. $(0, 1), \left(-\frac{1}{4}, 0\right)$

5. $(0, 1), \left(\frac{1}{4}, 0\right)$

052 (part 3 of 3) 10.0 points

c) Find its zeros.

1. $\left(\frac{1}{4}, 0\right)$

2. $(0, 1)$

3. $\left(-\frac{1}{4}, 0\right)$

4. $(1, 0)$

5. None of these

053 10.0 points

Solve

$$2x^2 - 11x = 6$$

for x .

What is the smaller solution ?

054 10.0 points

Find the zeros of the function

$$P(t) = t^4 - 22t^2 + 105.$$

1. $t = \pm 3\sqrt{7}$

2. $t = \pm\sqrt{7}$

3. $t = \pm 2\sqrt{7}, \pm\sqrt{15}$

4. $t = \sqrt{7}, \sqrt{15}$

5. $t = \pm\sqrt{7}, \pm\sqrt{15}$

055 10.0 points

Find the right-hand and left-hand behavior of

$$f(x) = -2.1x^5 + 4x^3 - 2.$$

1. Rises to the left, falls to the right

2. Rises to the left, rises to the right

3. Falls to the left, rises to the right

4. Falls to the left, falls to the right

056 10.0 points

Find the right-hand and left-hand behavior of

$$h(x) = 1 - x^6.$$

1. Rises to the left, rises to the right

2. Falls to the left, rises to the right

3. Rises to the left, falls to the right

4. Falls to the left, falls to the right

057 10.0 points

Find the asymptotes of

$$g(x) = \frac{5x^4 - 8x + 3}{x^4 + 4}.$$

1. $x = -4$

2. $y = 5$

3. $y = 0$

4. $x = -4, x = 4$

5. $x = -4, y = 5$

6. $y = 4$

7. None of these

058 (part 1 of 4) 10.0 points

Consider

$$f(x) = \frac{1}{x - 9}.$$

a) Find the x -intercept.

1. None of these

2. $(9, 0)$

3. $(-9, 0)$

4. $(1, 0)$

059 (part 2 of 4) 10.0 pointsb) Find the y -intercept.

1. $(0, 9)$

2. None of these

3. $\left(0, -\frac{1}{9}\right)$

4. $\left(0, \frac{1}{9}\right)$

060 (part 3 of 4) 10.0 points

c) Find the vertical asymptote.

1. $x = 0$

2. $x = 9$

3. None of these

4. $x = -9$

061 (part 4 of 4) 10.0 points

d) Find the horizontal asymptote.

1. $y = 0$

2. None of these

3. $y = 9$

4. $y = -9$

062 (part 1 of 4) 10.0 points

Consider

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

a) Find the x -intercept.

1. $\left(\frac{1}{3}, 0\right)$

2. $\left(-\frac{1}{3}, 0\right)$

3. $(3, 0)$

4. $(-3, 0)$

5. None of these

063 (part 2 of 4) 10.0 pointsb) Find the y -intercept.

1. $(0, 3)$

2. None of these

3. $\left(0, -\frac{1}{3}\right)$

4. $(0, 1)$

064 (part 3 of 4) 10.0 points

c) Find the vertical asymptote.

1. $x = 3$

2. None of these

3. $x = 1$

4. $x = 0$

065 (part 4 of 4) 10.0 points

d) Find the horizontal asymptote.

1. $y = 3$

2. $y = 1$

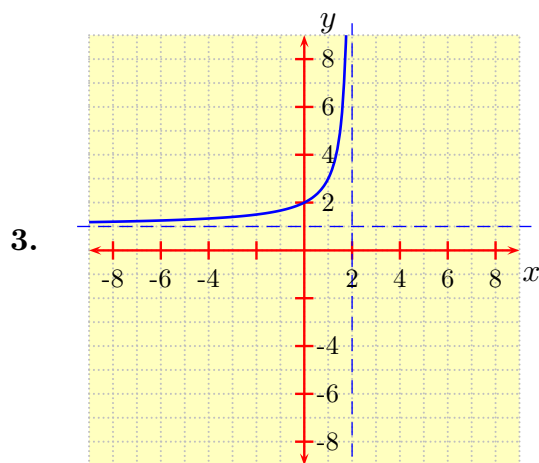
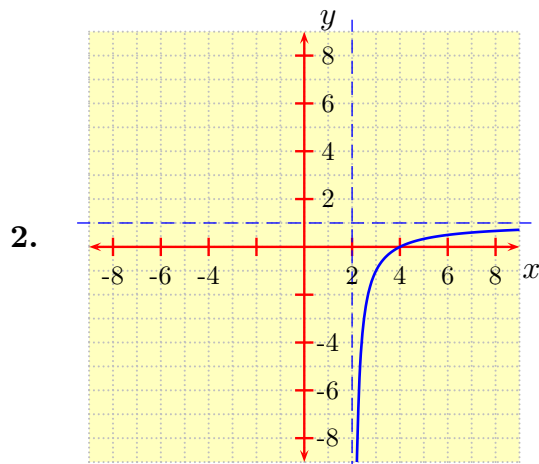
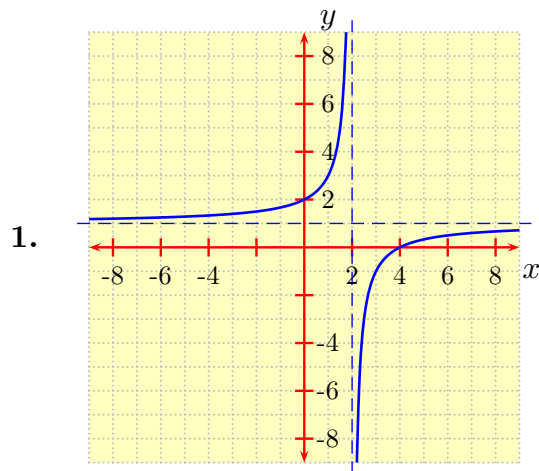
3. $y = 0$

4. None of these

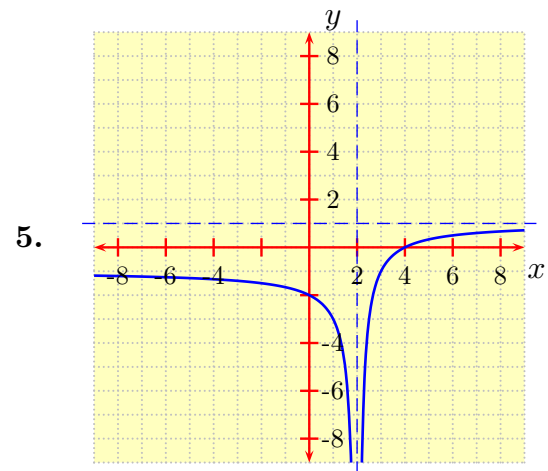
066 10.0 points

Sketch the graph of the function

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



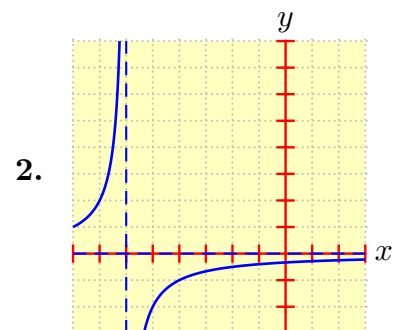
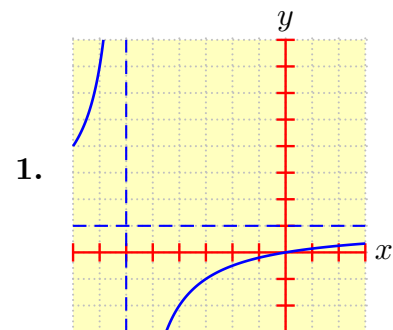
4. None of these



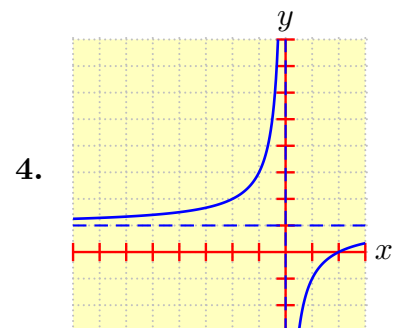
067 10.0 points

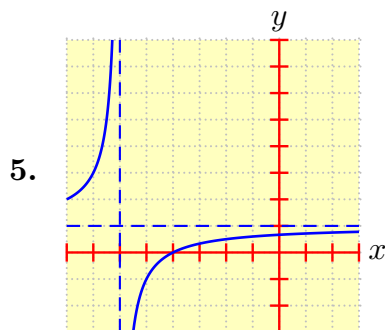
Sketch the graph of the function

$$f(x) = -\frac{2}{x+6} + 1$$



3. None of these





068 10.0 points

Find the solution of

$$\frac{2}{x-3} + \frac{4}{3x+5} = \frac{13}{3x^2-4x-15}.$$

069 10.0 points

If a, b are the solutions of

$$\frac{-27}{t+1} + \frac{t+8}{1} = 1,$$

compute the sum $a + b$.

1. $a + b = 12$

2. $a + b = 1$

3. $a + b = 0$

4. $a + b = 2$

5. $a + b = -8$

070 10.0 points

Find all solutions of

$$\frac{x}{x-1} + \frac{x^2+4}{x^2-1} = \frac{2x}{x+1}.$$

1. $x = \frac{5}{3}$

2. $x = \frac{4}{3}$

3. $x = 1$

4. $x = -\frac{5}{3}$

5. $x = -\frac{4}{3}$

6. $x = -1$

071 10.0 points

Solve

$$\frac{x^2-16}{x} < 0$$

1. None of these

2. $(-\infty, 5)$

3. $(-\infty, -4) \cup (0, 4)$

4. $(-\infty, -5) \cup (0, 5)$

5. $(-4, 0) \cup (4, \infty)$

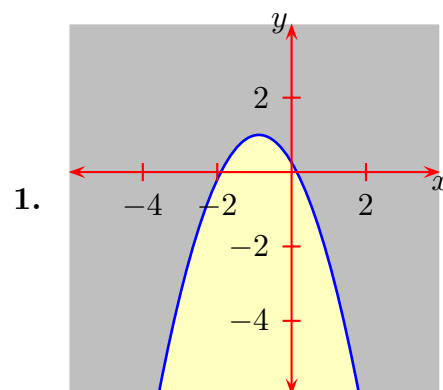
6. $(-\infty, 4) \cup (5, \infty)$

7. $(-\infty, 4) \cup (0, 4)$

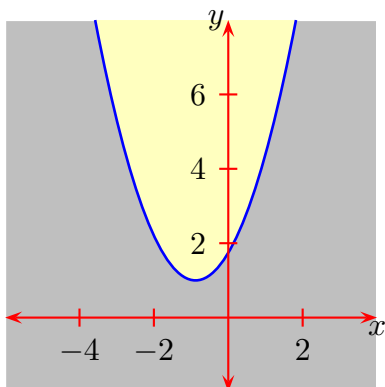
072 10.0 points

Match the inequality with its graph.

$$y \geq -x^2 + 2x$$

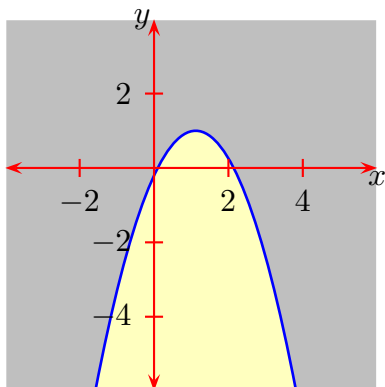


2.

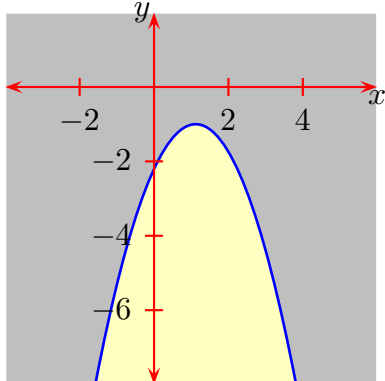


3. None of these.

4.



5.

**073 10.0 points**

Solve

$$\frac{x+12}{x+2} - 3 \geq 0$$

and graph the solution on a number line.

1. None of these
2. $(-2, 3)$
3. $(-2, 4)$
4. $[-2, 3)$
5. $(-2, 3]$

074 10.0 points

Evaluate

$$f(x) = 5 \sin x + \cos \frac{1}{2}x$$

at $x = \pi/3$.

1. $f(\pi/3) = 2\sqrt{3}$
2. $f(\pi/3) = 3\sqrt{3}$
3. $f(\pi/3) = 4\sqrt{3}$
4. $f(\pi/3) = 2$
5. $f(\pi/3) = 3$
6. $f(\pi/3) = 4$

075 (part 1 of 4) 10.0 points

Suppose

$$\csc \theta = \frac{13}{5}, \quad \tan \theta = \frac{5}{12}$$

a) Find $\sin \theta$.

1. None of these
2. $\frac{13}{5}$
3. $\frac{5}{12}$
4. $\frac{12}{5}$
5. $\frac{12}{13}$
6. $\frac{13}{12}$
7. $\frac{5}{13}$

076 (part 2 of 4) 10.0 pointsb) Find $\cos \theta$.

1. None of these
2. $\frac{13}{12}$

3. $\frac{12}{13}$

4. $\frac{13}{5}$

5. $\frac{5}{13}$

6. $\frac{5}{12}$

7. $\frac{12}{5}$

077 (part 3 of 4) 10.0 pointsc) Find $\sec \theta$.

1. $\frac{13}{12}$

2. $\frac{12}{13}$

3. $\frac{13}{5}$

4. None of these

5. $\frac{12}{5}$

6. $\frac{5}{12}$

7. $\frac{5}{13}$

078 (part 4 of 4) 10.0 pointsd) Find $\cot \theta$.

1. $\frac{12}{13}$

2. $\frac{5}{13}$

3. $\frac{13}{12}$

4. $\frac{12}{5}$

5. None of these

6. $\frac{13}{5}$

7. $\frac{5}{12}$

079 (part 1 of 3) 10.0 pointsIf $t = -\frac{\pi}{2}$, evaluate (if possible)a) $\sin t$

1. None of these

2. $\frac{1}{2}$

3. $\frac{\sqrt{3}}{2}$

4. $-\frac{\sqrt{3}}{2}$

5. -1

6. $-\frac{1}{\sqrt{2}}$

7. $\frac{1}{\sqrt{2}}$

080 (part 2 of 3) 10.0 pointsb) $\cos t$

1. 1

2. $\frac{\sqrt{3}}{2}$

3. None of these

4. $-\frac{\sqrt{3}}{2}$

5. $-\frac{1}{\sqrt{2}}$

6. 0

7. $\frac{1}{\sqrt{2}}$

081 (part 3 of 3) 10.0 pointsc) $\tan t$

1. $\frac{1}{\sqrt{2}}$

2. 1

3. Not possible

4. $-\frac{1}{\sqrt{2}}$

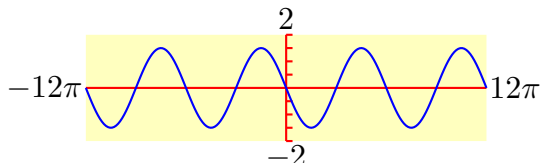
5. $-\frac{\sqrt{3}}{2}$

6. None of these

7. $\frac{\sqrt{3}}{2}$

082 (part 1 of 2) 10.0 points

Find the period of the function



$$y = -\frac{3}{2} \sin \frac{x}{3}$$

083 (part 2 of 2) 10.0 points

Find the amplitude of the function.

084 (part 1 of 2) 10.0 points

Given

$$\sin(-t) = 1$$

a) Evaluate $\sin t$.

085 (part 2 of 2) 10.0 pointsb) Evaluate $\csc t$.

086 10.0 points

Use trig identities to rewrite

$$f(v) = \frac{1}{1 - \cos 4v} - \frac{1}{1 + \cos 4v}.$$

1. $f(v) = \csc^2 4v$

2. $f(v) = \sec 4v \tan 4v$

3. $f(v) = 2 \csc^2 4v$

4. $f(v) = 2 \sec 4v \tan 4v$

5. $f(v) = 2 \csc 4v \cot 4v$

087 10.0 points

Determine which trigonometric function is equal to

$$\cos x \cot x + \sin x$$

1. $\csc x$

2. $\cot x$

3. $\tan x$

4. $\sec x$

5. $\cos x$

6. $\sin x$

088 10.0 points

Determine which trigonometric function is equal to

$$\frac{1}{2} \left(\frac{1 + \sin \theta}{\cos \theta} + \frac{\cos \theta}{1 + \sin \theta} \right)$$

1. $\cos \theta$

2. $\csc \theta$

3. $\sec \theta$

4. $\sin \theta$

5. $\tan \theta$

6. $\cot \theta$

089 (part 1 of 3) 10.0 pointsa) $\sec x \cos x =$

1. $\cos x$

2. -1

3. $\sin x$

4. $-\tan x$

5. 1

6. $\cot x$

090 (part 2 of 3) 10.0 pointsb) $\cot x \sin x =$ 1. $\sin x$ 2. $\cos x$ 3. $\cot x$ 4. $-\tan x$

5. 1

6. -1

091 (part 3 of 3) 10.0 pointsc) $\tan^2 x - \sec^2 x =$ 1. $-\tan x$

2. 1

3. $\cot x$ 4. $\cos x$ 5. -1 6. $\sin x$

092 (part 1 of 3) 10.0 pointsa) $\sin x \sec x =$ 1. $\sec^2 x$ 2. $\sin x \tan x$ 3. $\sec^2 x + \tan^2 x$ 4. $\sin^2 x$ 5. $\csc x$ 6. $\tan x$

093 (part 2 of 3) 10.0 pointsb) $\cos^2 x (\sec^2 x - 1) =$ 1. $\sin x \tan x$ 2. $\tan x$ 3. $\sin^2 x$ 4. $\sec^2 x + \tan^2 x$ 5. $\csc x$ 6. $\sec^2 x$

094 (part 3 of 3) 10.0 pointsc) $\sec^4 x - \tan^4 x =$ 1. $\csc x$ 2. $\sin x \tan x$ 3. $\sec^2 x$ 4. $\sec^2 x + \tan^2 x$ 5. $\tan x$ 6. $\sin^2 x$

095 10.0 points

Simplify

 $\sin \phi (\csc \phi - \sin \phi)$ 1. $\csc^2 \phi$ 2. $\cos^2 \phi$

3. 1

4. $\sec^2 \phi$

5. None of these

6. $\tan^2 \phi$

7. 0

8. $\cot^2 \phi$

9. -1

10. $\sin^2 \phi$

096 10.0 points

Simplify

$$\sec^2 x (1 - \sin^2 x)$$

1. 0

2. $\sec^2 x$

3. $\cot^2 x$

4. $\tan^2 x$

5. $\cos^2 x$

6. $\sin^2 x$

7. $\csc^2 x$

8. 1

9. -1

10. None of these

097 10.0 points

Simplify

$$\frac{\csc \theta}{\sec \theta}$$

1. $\sec \theta$

2. $\cos \theta$

3. $\tan \theta$

4. -1

5. 1

6. 0

7. None of these

8. $\csc \theta$

9. $\cot \theta$

10. $\sin \theta$

098 10.0 points

Simplify

$$\frac{1}{\tan^2 x + 1}$$

1. -1

2. $\tan^2 x$

3. $\csc^2 x$

4. $\cot^2 x$

5. 1

6. 0

7. $\sec^2 x$

8. $\cos^2 x$

9. $\sin^2 x$

10. None of these

099 10.0 points

Simplify

$$\frac{\tan^2 \theta}{\sec^2 \theta}$$

1. 1

2. None of these

3. $\sin^2 \theta$

4. $\tan^2 \theta$

5. $\csc^2 \theta$

6. $\cos^2 \theta$

7. -1

8. $\sec^2 \theta$

9. 0

10. $\cot^2 \theta$

100 10.0 points

Simplify

$$\frac{\sec^2 x - 1}{\sec x - 1}$$

1. $\sec x - 1$ 2. $\tan x + 1$ 3. $\csc x + 1$ 4. $\sec x + 1$ 5. $\sin x + 1$ 6. $\tan x - 1$ 7. $\sin x - 1$

8. None of these

9. $\cos x + 1$ 10. $\csc x - 1$

101 10.0 points

Find the exact value of

$$\cos(255^\circ) = \cos(225^\circ + 30^\circ)$$

1. $\frac{\sqrt{2}}{4}(\sqrt{3} - 1)$

2. $\frac{\sqrt{2}}{4}(1 - \sqrt{3})$

3. $\frac{\sqrt{2}}{4}(1 - \sqrt{2})$

4. $\frac{\sqrt{2}}{2}(1 - \sqrt{3})$

5. $\frac{\sqrt{2}}{2}(1 - \sqrt{2})$

6. $\frac{\sqrt{2}}{2}(\sqrt{2} - 1)$

7. $\frac{\sqrt{2}}{2}(\sqrt{3} - 1)$

8. -1

9. $\frac{\sqrt{2}}{4}(\sqrt{2} - 1)$

10. None of these

102 10.0 points

Find the exact value of

$$\sin\left(\frac{\pi}{3} + \frac{\pi}{4}\right).$$

1. $\frac{\sqrt{3} + 1}{2\sqrt{2}}$

2. $\frac{\sqrt{2} + 1}{2\sqrt{3}}$

3. $\frac{\sqrt{2} - 1}{2\sqrt{3}}$

4. $\frac{\sqrt{3} + \sqrt{2}}{4}$

5. $\frac{\sqrt{3} - \sqrt{2}}{4}$

6. $\frac{\sqrt{3} - 1}{2\sqrt{2}}$

103 10.0 points

Compute the exact value of

$$\cos\left(\frac{\pi}{4} - \frac{\pi}{6}\right).$$

1. $-\frac{\sqrt{3} + 1}{4}$

2. $\frac{1 + \sqrt{3}}{2\sqrt{2}}$

3. $\frac{\sqrt{3} - 1}{2\sqrt{2}}$

4. $\frac{\sqrt{2} - \sqrt{3}}{4}$

5. $\frac{1 - \sqrt{3}}{2\sqrt{2}}$

6. $\frac{\sqrt{3} + \sqrt{2}}{4}$

104 10.0 points

Simplify the expression

$$f(\theta) = \frac{\sin 6\theta}{\cos 3\theta} - 5 \sin 3\theta.$$

1. $f(\theta) = 7 \sin 3\theta$

2. $f(\theta) = -4 \sin 3\theta$

3. $f(\theta) = 6 \sin 3\theta$

4. $f(\theta) = -3 \sin 3\theta$

5. $f(\theta) = \cos 3\theta + 5 \sin 3\theta$

6. $f(\theta) = \cos 3\theta - 5 \sin 3\theta$

105 10.0 points

Use trig identities to rewrite the expression

$$f(x, y) = \cos(x + y) \sin(x - y).$$

1. $f(x, y) = \sin x \cos x + \sin y \cos y$

2. $f(x, y) = \cos^2 x - \sin^2 y$

3. $f(x, y) = \sin^2 x - \sin^2 y$

4. $f(x, y) = \frac{1}{2} \sin(2x + 2y)$

5. $f(x, y) = \sin x \cos x - \sin y \cos y$

6. $f(x, y) = \frac{1}{2} \sin(2x - 2y)$

106 10.0 points

Use double angle formulas to simplify the expression

$$f(\theta) = 5 \cos^2 \theta - \sin^2 \theta.$$

1. $f(\theta) = 3 - 2 \cos 2\theta$

2. $f(\theta) = 3 + 2 \cos 2\theta$

3. $f(\theta) = -3 - 2 \cos 2\theta$

4. $f(\theta) = 2 - 3 \cos 2\theta$

5. $f(\theta) = -2 - 3 \cos 2\theta$

6. $f(\theta) = 2 + 3 \cos 2\theta$

107 10.0 points

Solve

$$\sin 2x + \cos x = 0$$

for x in the range of $[0, 2\pi)$.

1. $\frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{4}, \frac{5\pi}{4}$

2. None of these

3. $\frac{\pi}{3}, \frac{5\pi}{3}, \frac{\pi}{4}, \frac{7\pi}{4}$

4. $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$

5. $0, \pi, \frac{5\pi}{6}, \frac{13\pi}{6}$

108 10.0 points

Solve

$$\sin 2x \sin x = \cos x$$

for x on $[0, 2\pi)$.

1. $0, \pi, \frac{\pi}{3}, \frac{5\pi}{3}, \frac{\pi}{4}, \frac{7\pi}{4}$

2. $0, \pi, \frac{5\pi}{6}, \frac{13\pi}{6}, \frac{2\pi}{3}, \frac{4\pi}{3}$

3. None of these

4. $\frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

5. $\frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{\pi}{6}, \frac{11\pi}{6}$

109 10.0 points

Simplify

$$4 \sin x \cos x + 2$$

1. None of these

2. $2 \cos^2 2x$

3. $2 \sin^2 2x$

4. $2 \sin 2x + 2$

5. $2 \cos 2x + 2$

110 10.0 points

Write

$$\cos\left(\theta + \frac{\pi}{2}\right) - \cos\left(\theta - \frac{\pi}{2}\right)$$

as a product.

1. $-2 \cos \theta$

2. $-2 \sin \theta$

3. -2

4. 2

5. None of these

6. $2 \sin \theta$

7. 0

111 (part 1 of 3) 10.0 points

Given

$$\cos u = -\frac{2}{3}, \quad \frac{\pi}{2} < u < \pi,$$

find the exact value of

a) $\sin 2u$

1. None of these

2. $-\frac{4\sqrt{5}}{9}$

3. $\frac{3\sqrt{3}}{4}$

4. $\frac{2\sqrt{3}}{9}$

5. $-\frac{\sqrt{2}}{3}$

112 (part 2 of 3) 10.0 points

$\cos 2u$.

1. $\frac{1}{4}$

2. None of these

3. $-\frac{2}{3}$

4. $-\frac{1}{9}$

5. $\frac{3}{4}$

113 (part 3 of 3) 10.0 points

$\tan 2u$.

1. $\frac{3\sqrt{3}}{5}$

2. None of these

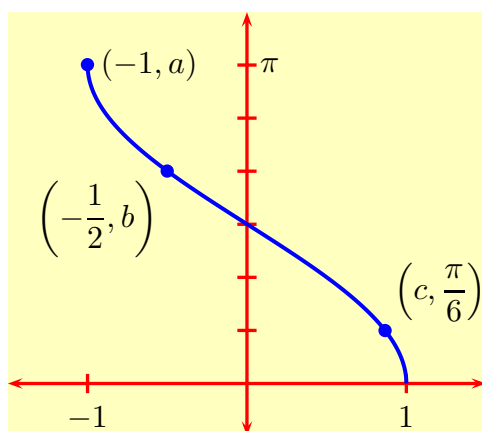
3. $2\sqrt{3}$

4. $4\sqrt{5}$

5. $-\frac{\sqrt{2}}{3}$

114 10.0 points

Find the coordinate of the points in the figure

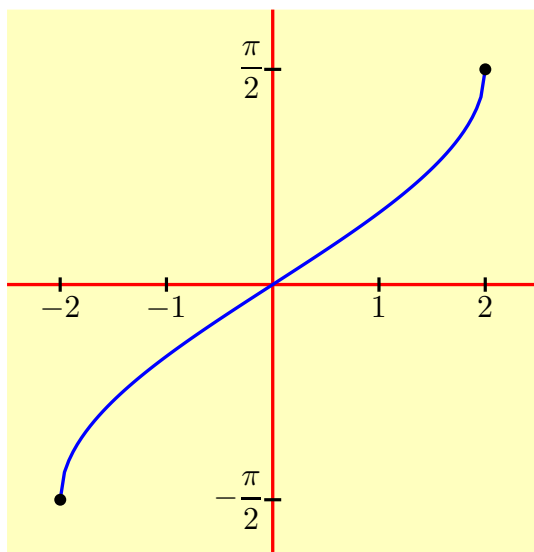


$$y = \arccos x$$

1. $a = \pi, b = \frac{2\pi}{3}, c = \frac{\sqrt{3}}{2}$
2. $a = 3, b = \frac{\pi}{3}, c = \frac{1}{2}$
3. $a = \pi, b = \frac{2\pi}{3}, c = \frac{1}{2}$
4. None of these
5. $a = 3, b = \frac{2\pi}{3}, c = \frac{\sqrt{2}}{2}$

115 10.0 points

Find the equation of the graph



$$1. y(x) = \arcsin(x - 1)$$

$$2. y(x) = \arcsin \frac{x}{3}$$

$$3. y(x) = \arcsin \frac{x}{2}$$

$$4. y(x) = 2 \arccos x$$

$$5. y(x) = \arccos \frac{\pi}{4}$$

$$6. y(x) = \arctan(2x)$$

$$7. y(x) = \arccos(x + 2)$$

$$8. y(x) = \arcsin(2x)$$

$$9. y(x) = \frac{\pi}{2} + \arctan x$$

$$10. y(x) = \arcsin x$$

116 10.0 points

Compute the exact value of

$$\cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right).$$

$$1. \cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right) = \frac{2}{2\sqrt{5}}$$

$$2. \cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right) = \frac{2}{2\sqrt{3}}$$

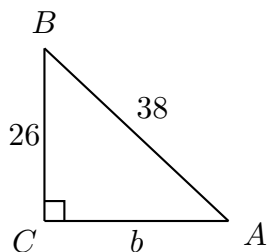
$$3. \cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right) = \frac{4}{2\sqrt{3}}$$

$$4. \cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right) = \frac{2\sqrt{3}}{4}$$

$$5. \cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right) = \frac{4}{2\sqrt{5}}$$

117 (part 1 of 3) 10.0 points

Consider the right triangle shown below



a) What is b ?

118 (part 2 of 3) 10.0 points

b) What is A in degrees?

119 (part 3 of 3) 10.0 points

c) What is B in degrees?

120 (part 1 of 2) 10.0 points

Evaluate

a) $\sin\left(\arctan\frac{3}{4}\right)$.

1. $\frac{4}{5}$

2. $\frac{2}{\sqrt{3}}$

3. $\frac{3}{5}$

4. $\frac{5}{4}$

5. $\frac{5}{3}$

6. $\frac{\sqrt{3}}{2}$

121 (part 2 of 2) 10.0 points

b) $\sec\left(\arcsin\frac{4}{5}\right)$.

1. $\frac{4}{5}$

2. $\frac{5}{3}$

3. $\frac{2}{\sqrt{3}}$

4. $\frac{5}{4}$

5. $\frac{\sqrt{3}}{2}$

6. $\frac{3}{5}$

122 (part 1 of 2) 10.0 points

Evaluate

$$\cot\left[\arcsin\left(-\frac{1}{2}\right)\right].$$

1. $-\frac{2}{\sqrt{3}}$

2. $-\frac{\sqrt{3}}{2}$

3. $-\frac{1}{2}$

4. $-\sqrt{3}$

5. -2

123 (part 2 of 2) 10.0 points

$$\csc\left[\arctan\left(-\frac{5}{12}\right)\right].$$

1. $-\frac{12}{13}$

2. $-\frac{5}{13}$

3. $-\frac{13}{5}$

4. $-\frac{13}{12}$

5. $\frac{12}{13}$

124 10.0 points

Evaluate

$$\arctan\frac{\sqrt{3}}{3}$$

without using a calculator.

1. None of These

2. $\frac{\pi}{6}$

3. $\frac{\pi}{8}$
4. $\frac{\pi}{4}$
5. $\frac{\pi}{12}$
6. $\frac{\pi}{2}$

125 10.0 points

Evaluate

$$\operatorname{arccsc}(-\sqrt{2})$$

without using a calculator.

1. $\frac{\pi}{4}$
2. $-\frac{\pi}{4}$
3. $\frac{\pi}{2}$
4. None of These
5. $\frac{3\pi}{4}$
6. $\frac{-\pi}{2}$

126 10.0 points

Solve

$$2 \sin x - 1 = 0$$

for x .

1. $x = \frac{\pi}{3} + 2n\pi, \frac{2\pi}{3} + 2n\pi$
2. None of these
3. $x = \frac{\pi}{6} + 2n\pi, -\frac{\pi}{6} + 2n\pi$
4. $x = \frac{\pi}{3} + 2n\pi, -\frac{\pi}{3} + 2n\pi$
5. $x = \frac{\pi}{6} + 2n\pi, \frac{5\pi}{6} + 2n\pi$

127 10.0 points

Solve

$$\tan x + 1 = 0$$

for x .

1. $x = \frac{\pi}{4} + 2n\pi, \frac{3\pi}{4} + 2n\pi, n$ is any integer

$$2. x = -\frac{\pi}{4} + 2n\pi, n \text{ is any integer}$$

$$3. x = \frac{5\pi}{4} + n\pi, n \text{ is any integer}$$

4. None of these

$$5. x = \frac{3\pi}{4} + n\pi, n \text{ is any integer}$$

128 10.0 points

Solve

$$\csc^2 x - 2 = 0$$

for x .

1. $x = \frac{\pi}{4} + n\pi$
2. $x = \frac{\pi}{4} + \frac{n\pi}{2}$
3. $x = \frac{\pi}{4} + 2n\pi, \frac{3\pi}{4} + 2n\pi$
4. $x = \frac{3\pi}{4} + n\pi$
5. None of these

129 10.0 points

Solve

$$\sin(x)(\sin(x) + 1) = 0$$

for x .

1. $x = 2n\pi, \frac{3\pi}{2} + 2n\pi, n$ is any integer
2. $x = 2n\pi, \frac{3\pi}{2} + n\pi, n$ is any integer
3. $x = n\pi, \frac{3\pi}{2} + 2n\pi, n$ is any integer
4. None of these
5. $x = n\pi, \frac{3\pi}{2} + n\pi, n$ is any integer

130 10.0 points

Find all solutions of

$$\tan^2 x - 1 = 0$$

in the interval $[0, 2\pi)$.

1. None of these

2. $x = \frac{\pi}{4}, \frac{5\pi}{4}$

3. $x = \frac{\pi}{4}, \frac{3\pi}{4}$

4. $x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

5. $x = \frac{\pi}{4}, \frac{7\pi}{4}$

131 10.0 points

Find all solutions of

$$2 \sin^2 x = 2 + \cos x$$

in the interval $[0, 2\pi)$.

1. $x = \frac{\pi}{2}, \pi, \frac{4\pi}{3}, \frac{5\pi}{3}$

2. $x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{2\pi}{3}, \frac{5\pi}{3}$

3. $x = \pi, \frac{3\pi}{2}, \frac{2\pi}{3}, \frac{5\pi}{3}$

4. None of these

5. $x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{2\pi}{3}, \frac{4\pi}{3}$

132 10.0 points

Find all solutions of

$$\sec x \csc x = 2 \csc x$$

in the interval $[0, 2\pi)$.

1. $x = \frac{2\pi}{3}, \frac{4\pi}{3}$

2. $x = \frac{\pi}{3}, \frac{5\pi}{3}$

3. $x = \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{\pi}{2}, \frac{3\pi}{2}$

4. None of these

5. $x = \frac{\pi}{3}, \frac{5\pi}{3}, 0, \pi$

133 10.0 points

Find all solutions of

$$2 \sin^2 x + 3 \sin x + 1 = 0$$

in the interval $[0, 2\pi)$.

1. $x = \frac{4\pi}{3}, \frac{5\pi}{3}, \frac{3\pi}{2}$

2. $x = \frac{2\pi}{3}, \pi, \frac{4\pi}{3},$

3. $x = \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$

4. $x = \frac{5\pi}{6}, \frac{7\pi}{2}, \frac{3\pi}{2}$

5. None of these

134 10.0 points

Find solutions for

$$\csc x - 2 = 0$$

on the interval $[0, 2\pi]$.

1. $\frac{\pi}{3}, \frac{2\pi}{3}$

2. $\frac{\pi}{6}, \frac{5\pi}{6}$

3. $\frac{\pi}{6}, \frac{11\pi}{6}$

4. None of these

5. $\frac{\pi}{3}, \frac{5\pi}{3}$

135 10.0 points

Solve

$$\tan^2 \theta - \tan \theta = 0$$

for $\theta, 0 \leq \theta < 2\pi$.

1. $\theta = 0, \frac{\pi}{4}$

2. $\theta = \frac{3\pi}{4}, \pi, \frac{5\pi}{4}$

3. $\theta = 0, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}$

4. None of these

5. $\theta = \frac{\pi}{4}, \frac{5\pi}{4}$

6. $\theta = \frac{\pi}{4}, \frac{3\pi}{4}$

7. $\theta = 0, \frac{\pi}{4}, \frac{3\pi}{4}$

8. $\theta = 0$

9. $\theta = 0, \frac{\pi}{4}, \pi, \frac{5\pi}{4}$

10. $\theta = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

136 10.0 points

Solve

$$\sqrt{3} \sec \theta \csc \theta = 2 \csc \theta$$

for θ , $0 \leq \theta < 2\pi$.

1. $\theta = \frac{\pi}{3}, \frac{\pi}{6}, \frac{2\pi}{3}, \frac{5\pi}{3}$

2. $\theta = \frac{\pi}{6}, \frac{11\pi}{6}$

3. $\theta = \frac{\pi}{3}$

4. $\theta = \frac{\pi}{6}, \frac{5\pi}{6}$

5. $\theta = \frac{\pi}{6}$

6. $\theta = \frac{\pi}{3}, \frac{5\pi}{6}$

7. $\theta = \frac{\pi}{3}, \frac{2\pi}{3}$

8. None of these

137 10.0 points

Factor completely:

?

?

?

?

?

?

138 10.0 points

Solve for x:

$$4(x+1)^{1/2} - 5(x+1)^{3/2} + (x+1)^{5/2} = 0$$

1. $x = -1, 0, 3$

2. $x = -5, 4$

3. $x = -5, 1, 4$

4. $x = 3$

5. $x = -1, 3$

6. $x = 0, 3$

7. $x = 0$

8. $x = -1, 0$

9. $x = -1$

 139 10.0 points

Factor completely:

?

?

1.

?

2.

?

3.

?

4.

?

5.

?

6.

 140 10.0 points

Factor completely:

$$x^{-1/2}(x+1)^{1/2} + x^{1/2}(x+1)^{-1/2}$$

1. $x^{-\frac{1}{2}}(x+1)(2x+1)$

2. $x^{-\frac{1}{2}}(x+1)^{-\frac{1}{2}}(2x+1)$

3. $x^{\frac{1}{2}}(x+1)^{-\frac{1}{2}}(2x+1)$

4. $x^{-\frac{1}{2}}(2x+1)^{-\frac{1}{2}}(x+1)$

5. $x^{-\frac{1}{2}}(x+1)^{\frac{1}{2}}(2x+1)$

6. $x^{-\frac{1}{2}}(2x+1)^{-\frac{1}{2}}(x+1)^2$

141 10.0 points

Simplify:

?

1.

?

2.

?

3.

?

4.

?

5.

?

142 (part 1 of 2) 10.0 points

a) Solve $4^{\log_4 x + \log_4 2} = 4$ for x .

143 (part 2 of 2) 10.0 points

b) Solve $e^{3 \ln x} = 8$ for x .