

# Final Exam Math 2550 (Test)

 INSTRUCTOR  
Bradford Thompson  
South College


## Current Score

QUESTION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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## Due Date

**TUE, SEP 28, 2021**  
11:59 PM EDT

 Request Extension

## Assignment Submission & Scoring

### Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

### Assignment Scoring

Your last submission is used for your score.

1.

DETAILS

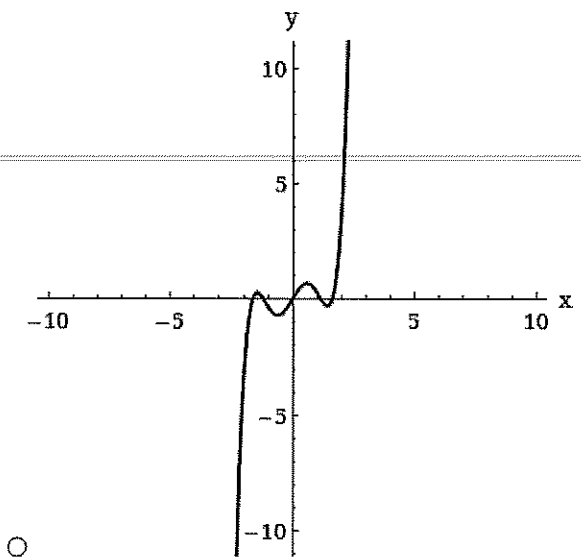
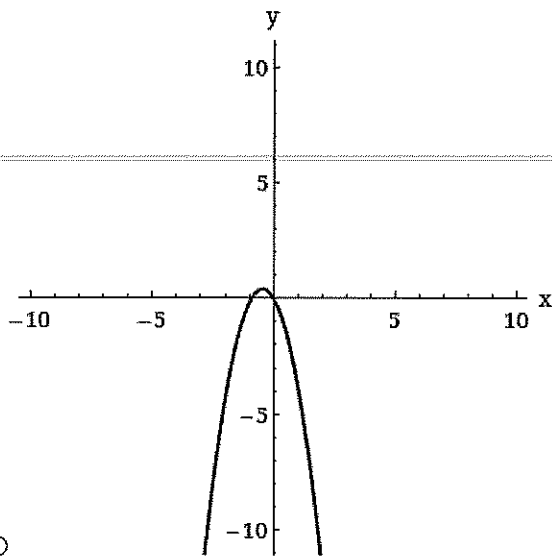
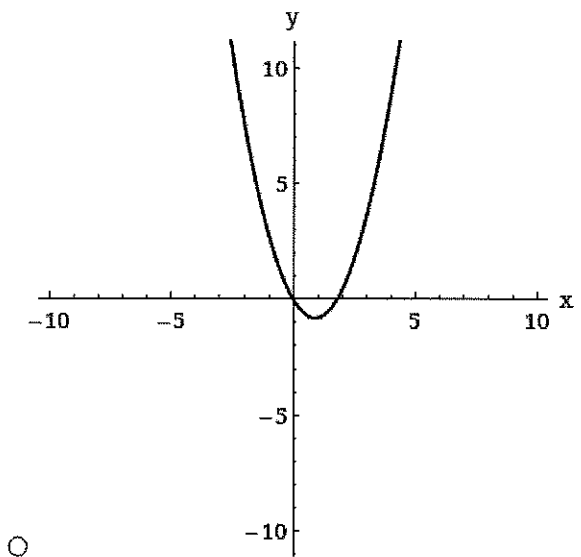
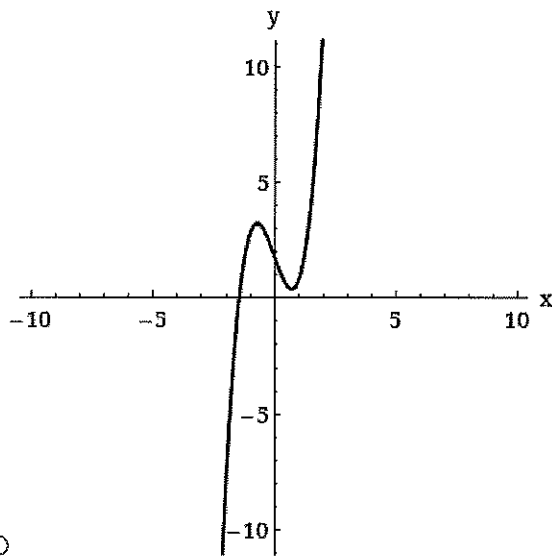
LARPCALC10 2.2.014.

MY NOTES

ASK YOUR TEACHER

Match the polynomial function with its graph.

$$f(x) = \frac{1}{2}x^5 - 2x^3 + \frac{9}{5}x$$



2.

DETAILS

LARPCALC10 5.4.023.

MY NOTES

ASK YOUR TEACHER

Find the exact values of the sine, cosine, and tangent of the angle.

 $345^\circ$ 

$$\sin(345^\circ) =$$

$$\cos(345^\circ) =$$

$$\tan(345^\circ) =$$

3.

DETAILS

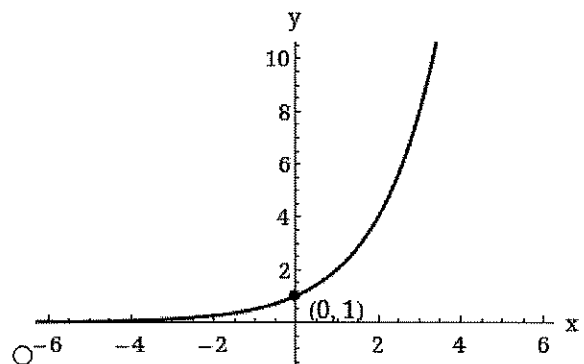
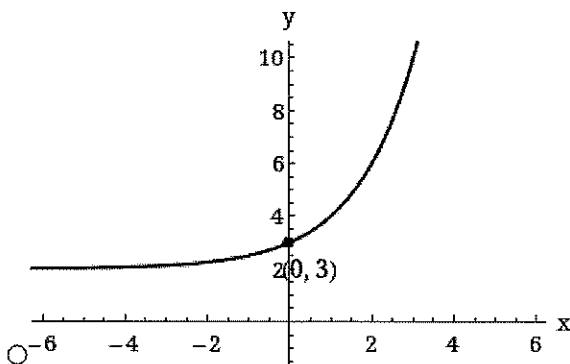
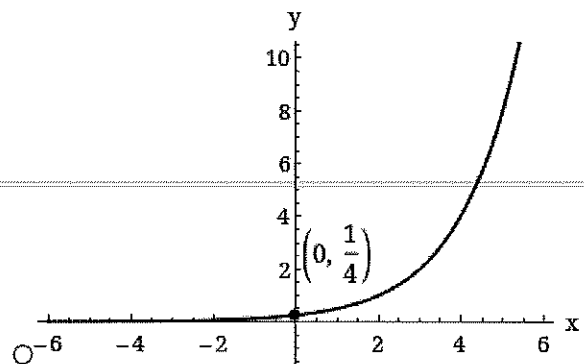
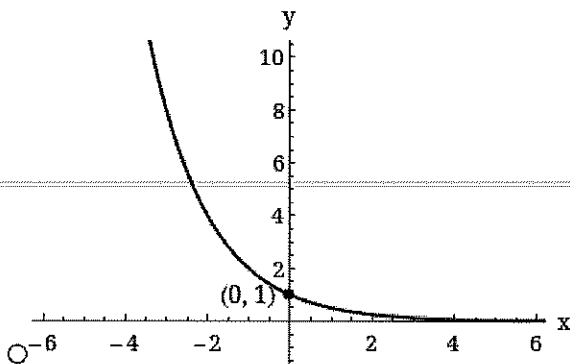
LARPCALC10 3.1.013.

MY NOTES

ASK YOUR TEACHER

Match the function with its graph.

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



4.

DETAILS

LARPCALC10 4.3.018.

MY NOTES

ASK YOUR TEACHER

Sketch a right triangle corresponding to the trigonometric function of the acute angle  $\theta$ . Then find the exact values of the other five trigonometric functions of  $\theta$ .

$$\tan(\theta) = \frac{2}{3}$$

$\sin(\theta) =$

$\cos(\theta) =$

$\csc(\theta) =$

$\sec(\theta) =$

$\cot(\theta) =$

5.

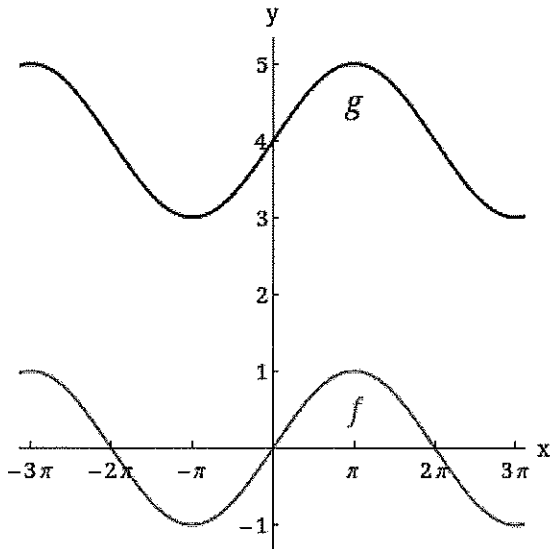
DETAILS

LARPCALC10 4.5.024.

MY NOTES

ASK YOUR TEACHER

Describe the relationship between the graphs of  $f$  and  $g$ . Consider amplitude, period, and shifts.



- The graph of  $g$  is a reflection of  $f$  in the  $x$ -axis.  
 The period of  $g$  is 4 times that of  $f$ .  
 The graph of  $g$  is a horizontal shift 4 units to the right of the graph of  $f$ .  
 The graph of  $g$  is a vertical shift 4 units upward from the graph of  $f$ .  
 The amplitude of  $g$  is twice that of the amplitude of  $f$ .

6.

DETAILS

LARPCALC10 5.5.022.

MY NOTES

ASK YOUR TEACHER

Use the given conditions to find the exact values of  $\sin(2u)$ ,  $\cos(2u)$ , and  $\tan(2u)$  using the double-angle formulas.

$$\cos(u) = -\frac{12}{13}, \quad \pi/2 < u < \pi$$

$$\sin(2u) = \frac{\quad}{\quad}$$

$$\cos(2u) = \frac{\quad}{\quad}$$

$$\tan(2u) = \frac{\quad}{\quad}$$

7.

DETAILS

LARPCALC10 3.4.008.MI.

MY NOTES

ASK YOUR TEACHER

Solve for  $x$ .

$$\left(\frac{1}{3}\right)^x = 9$$

$$x = \boxed{\quad}$$

8.

DETAILS

LARPCALC10 2.1.014.

MY NOTES

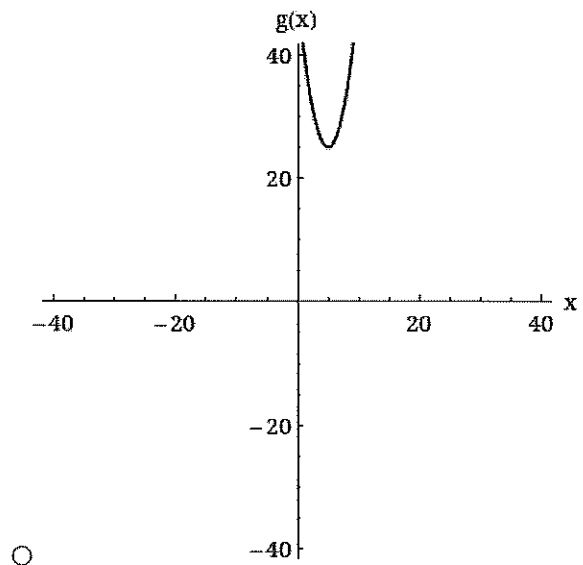
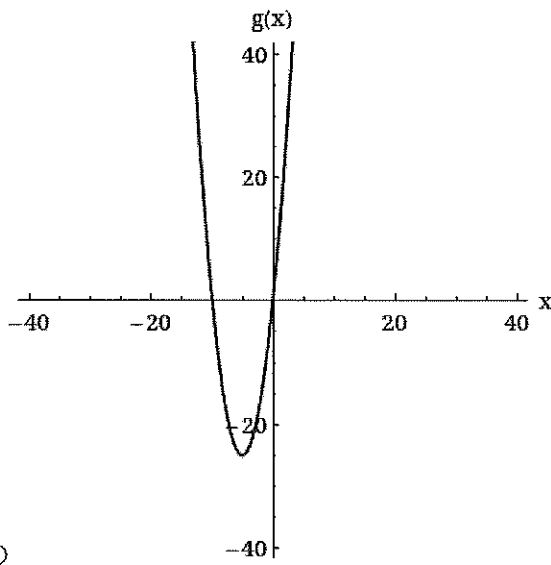
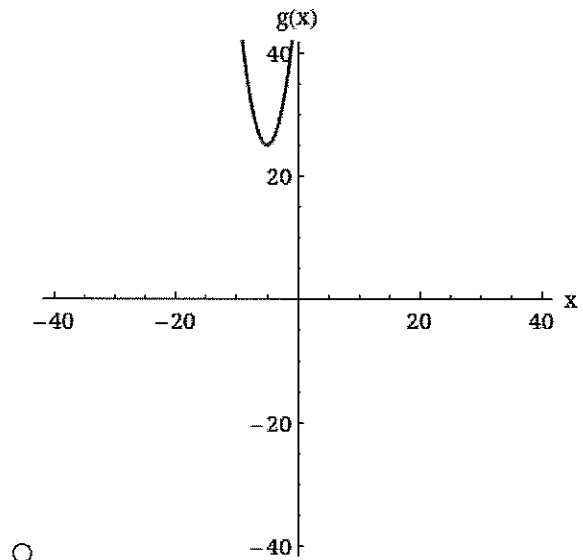
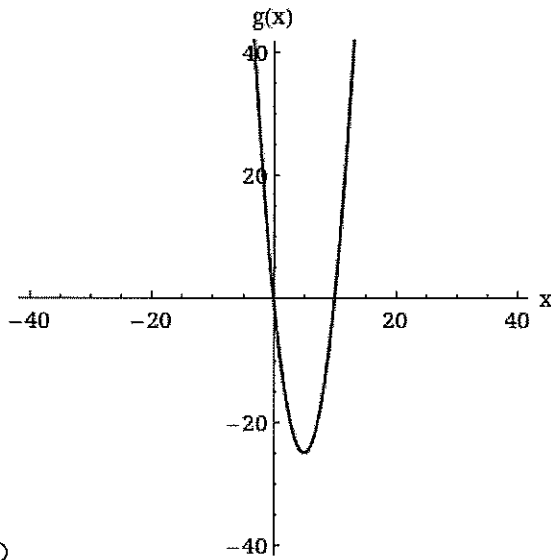
ASK YOUR TEACHER

Write the quadratic function in standard form.

$$g(x) = x^2 - 10x$$

 $g(x) =$ 


Sketch its graph.



Identify the vertex, axis of symmetry, and x-intercept(s). (If an answer does not exist, enter DNE.)

vertex

 $(x, g(x)) = ($ 


axis of symmetry

x-intercept

$$(x, g(x)) = ($$
$$)$$

(smaller x-value)

x-intercept

$$(x, g(x)) = ($$
$$)$$

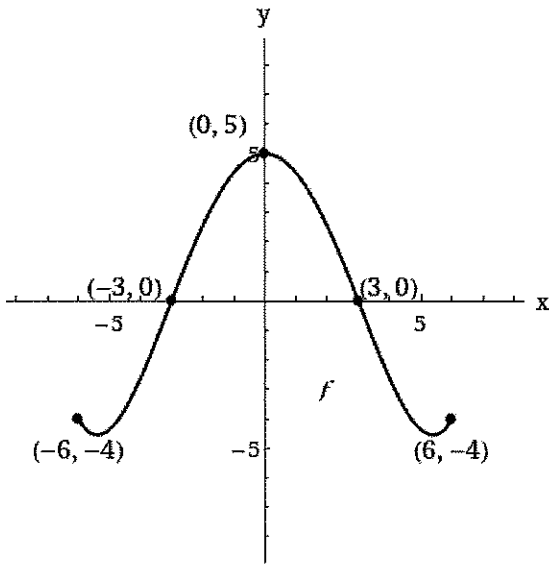
(larger x-value)

9. DETAILS **LARPCALC10 5.1.021.** MY NOTES ASK YOUR TEACHER

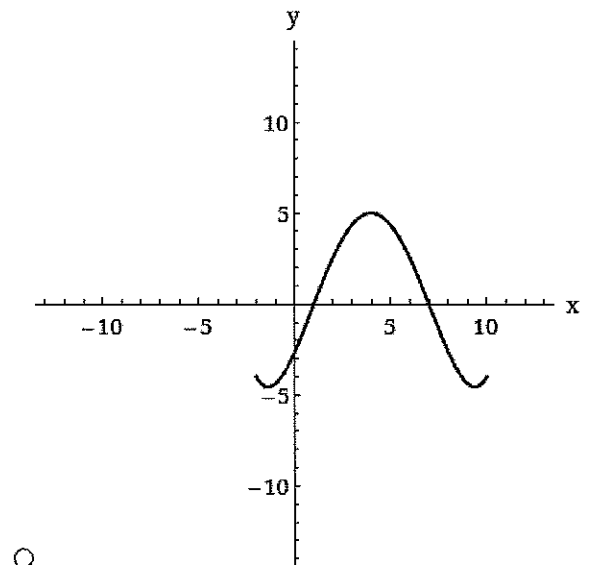
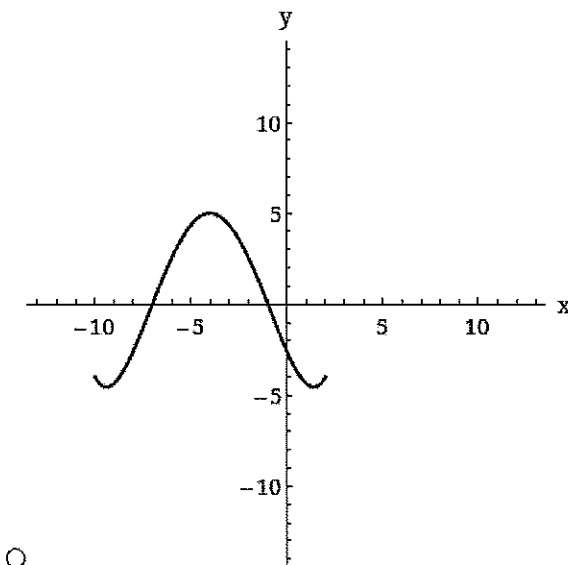
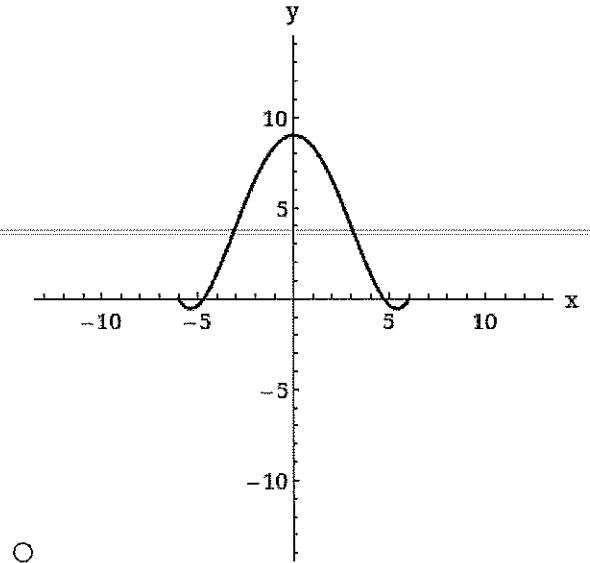
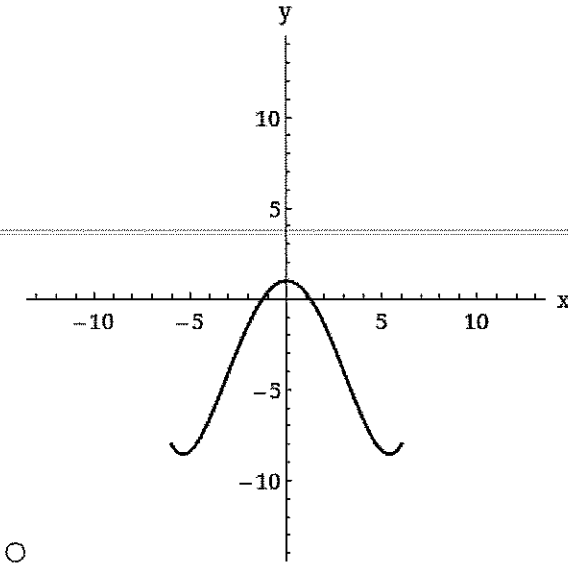
Use the fundamental identities to simplify the expression. (There is more than one correct form of the answer.)

$$\tan^2(x) - \tan^2(x) \sin^2(x)$$

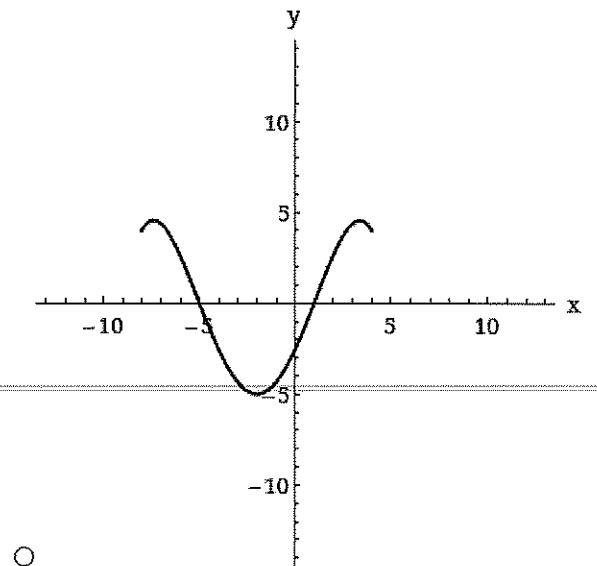
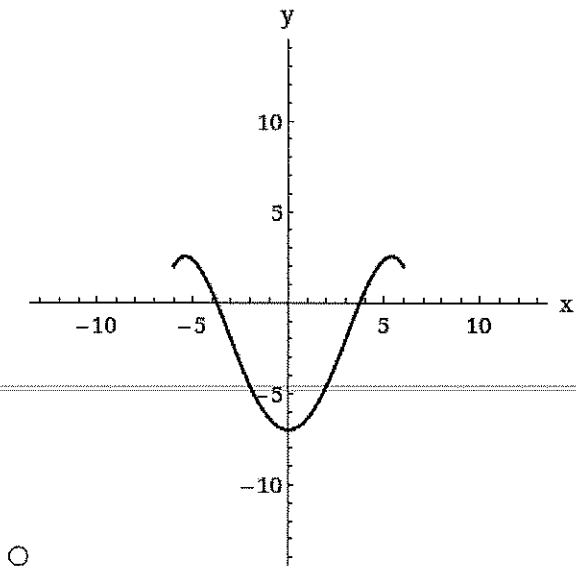
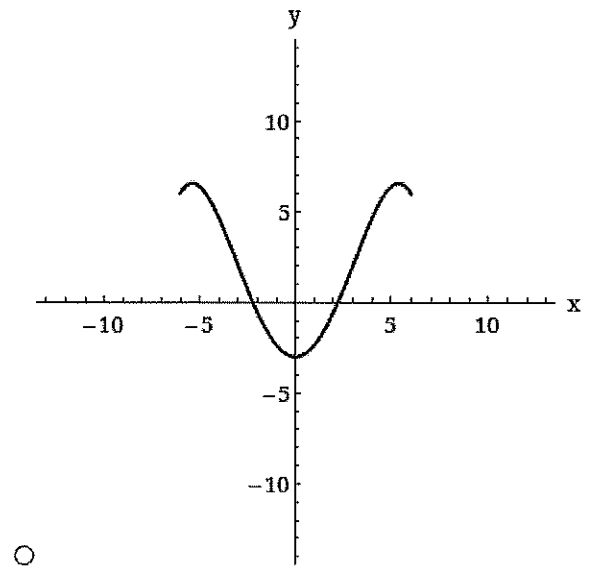
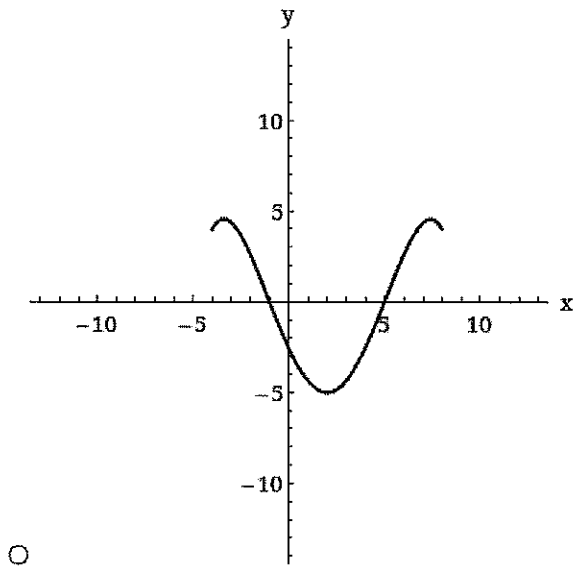
Use the graph of  $f$  to sketch each graph.



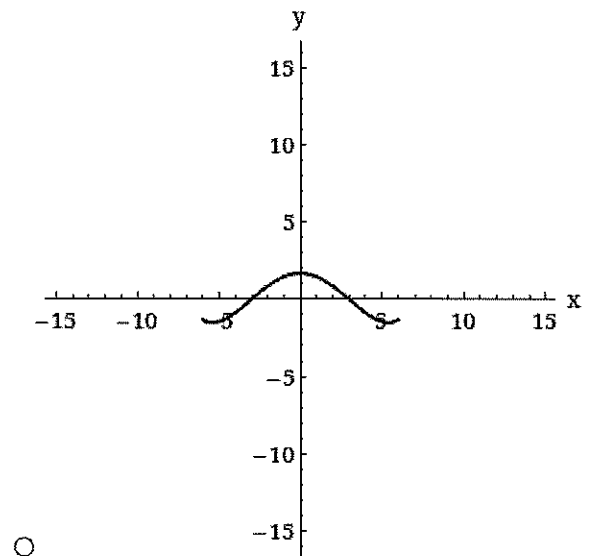
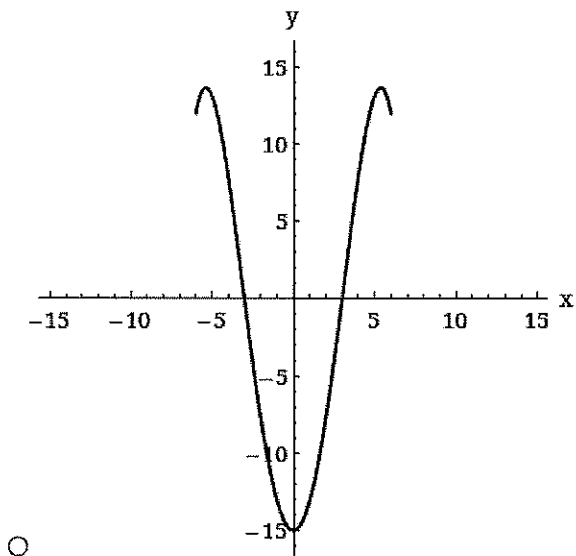
(a)  $y = f(x - 4)$

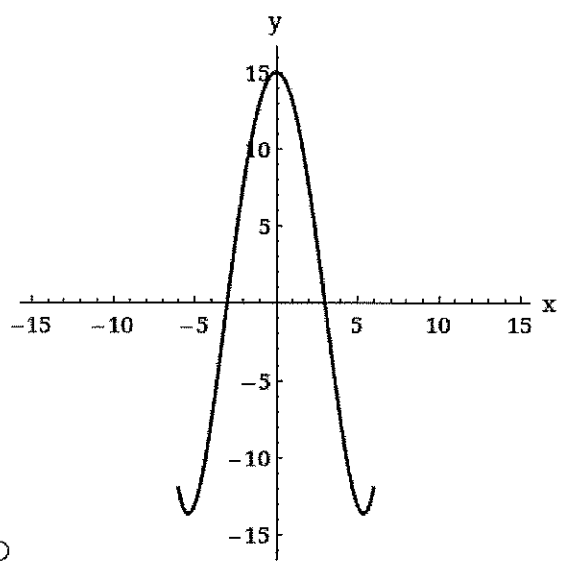
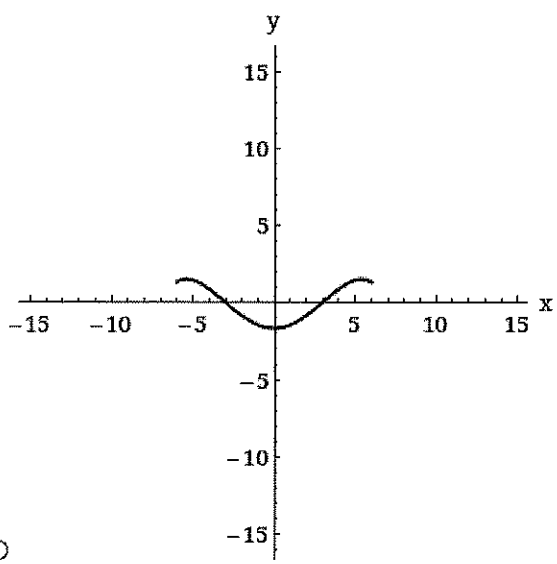


(b)  $y = -f(x) + 2$

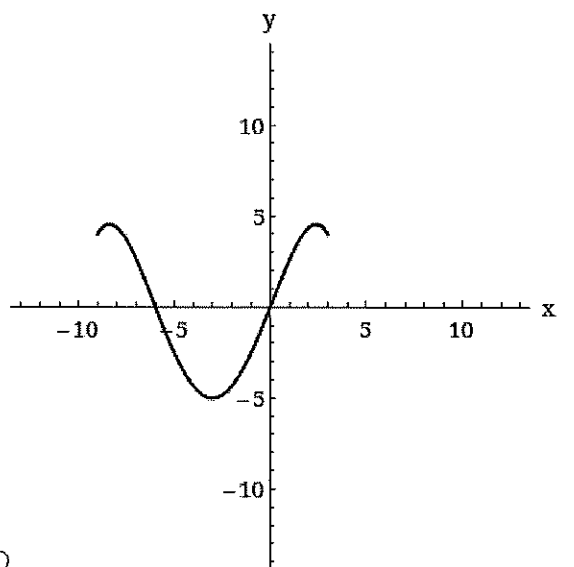
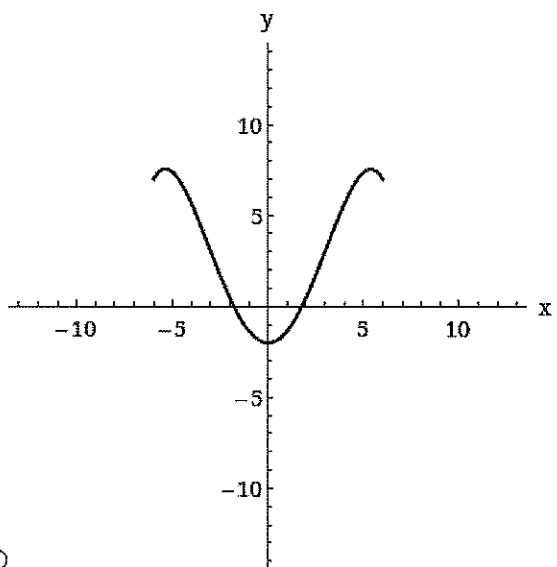
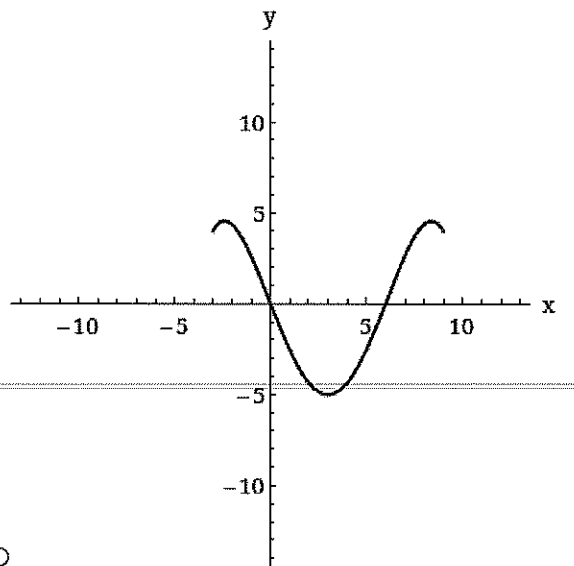
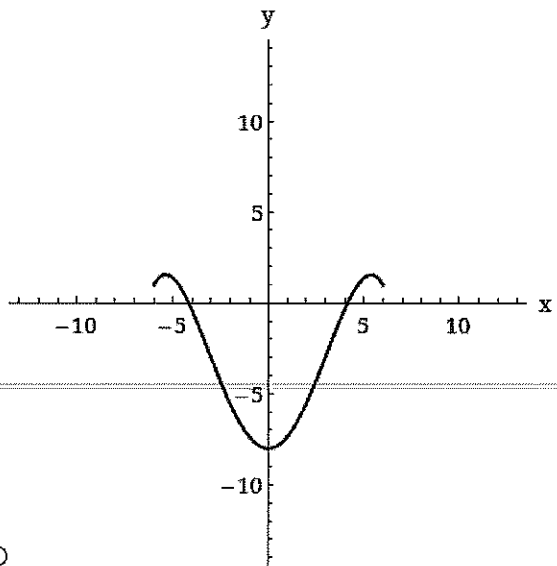


(c)  $y = \frac{1}{3}f(x)$

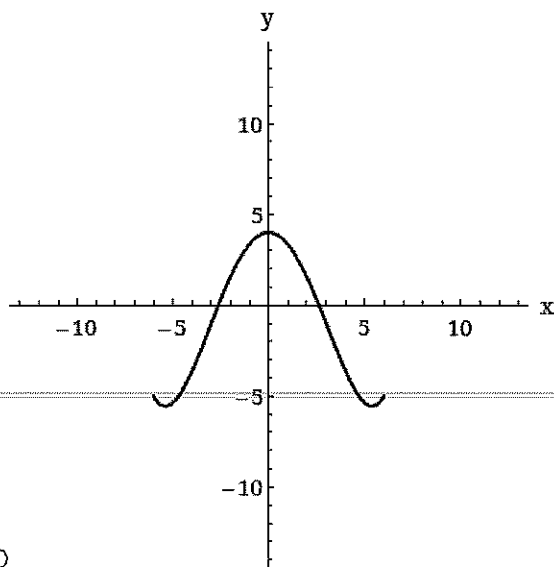
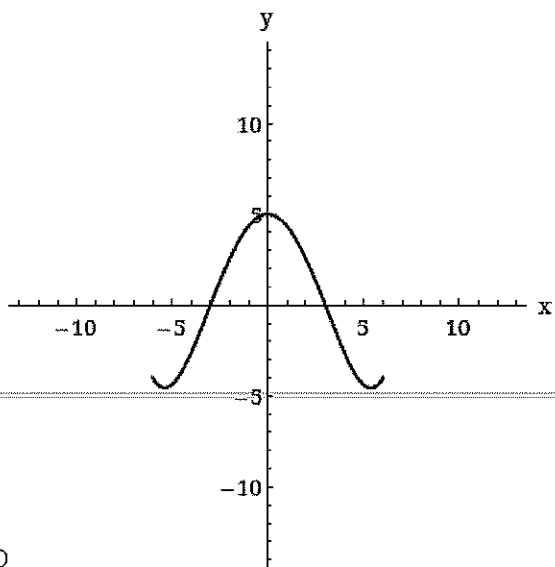
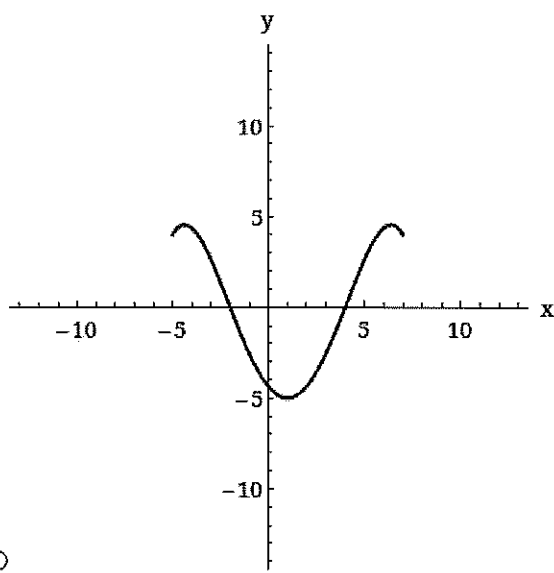
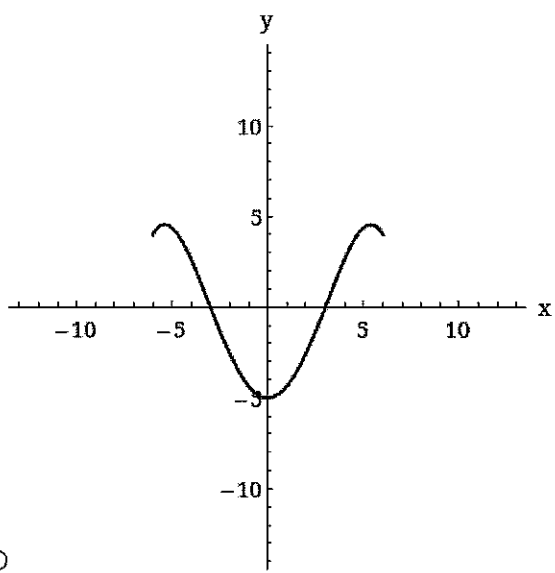




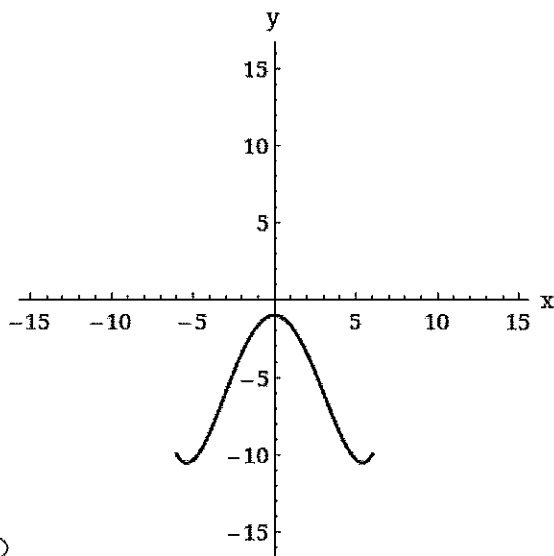
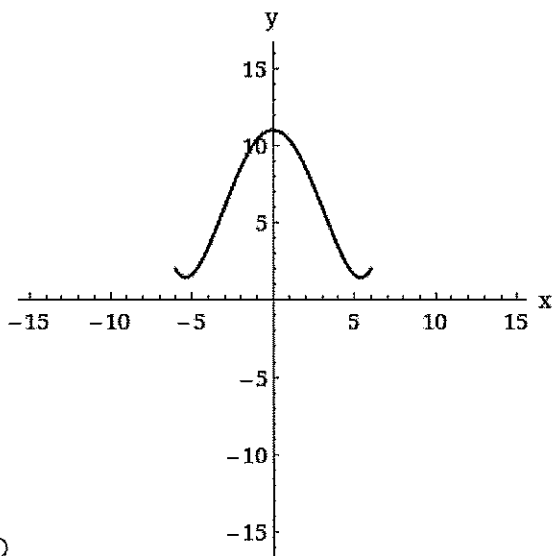
(d)  $y = -f(x + 3)$

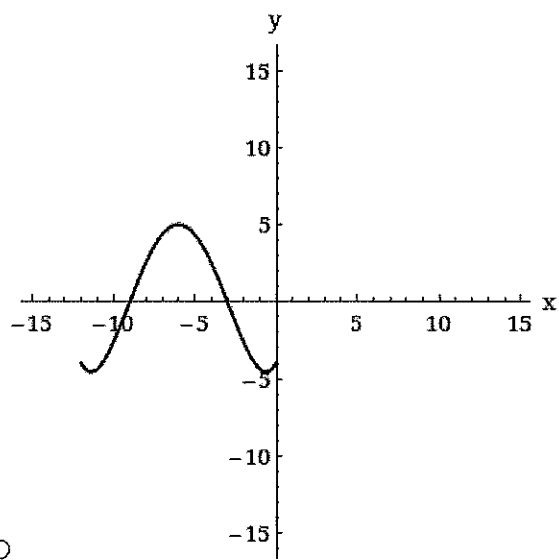
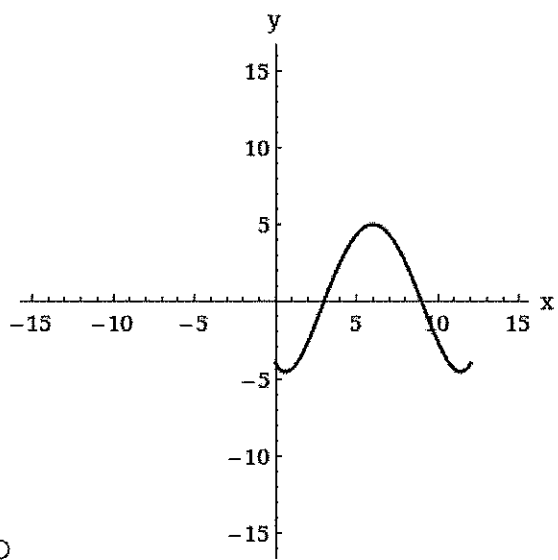


(e)  $y = f(-x)$

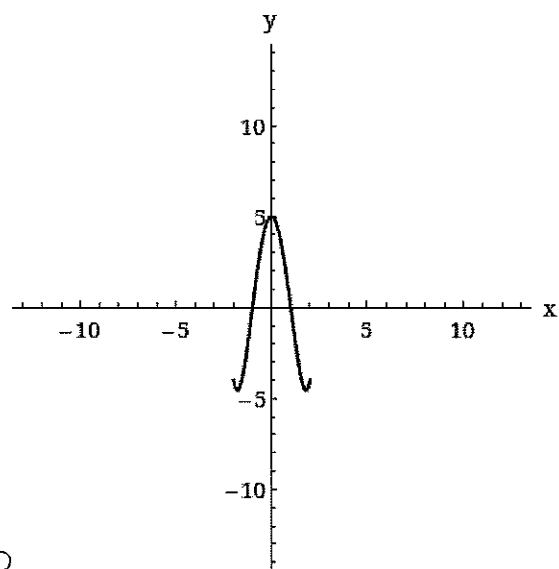
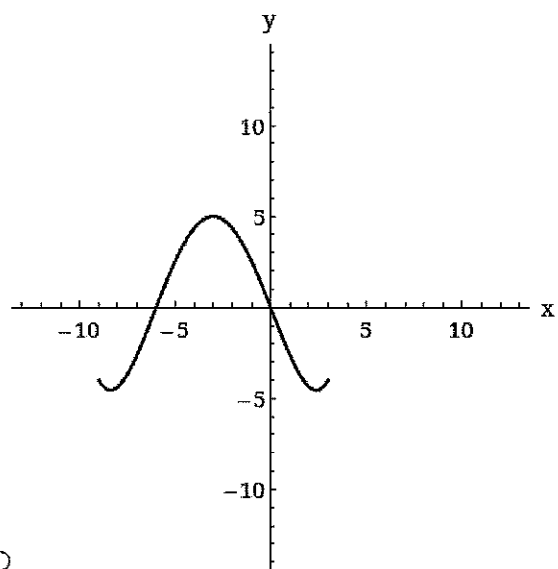
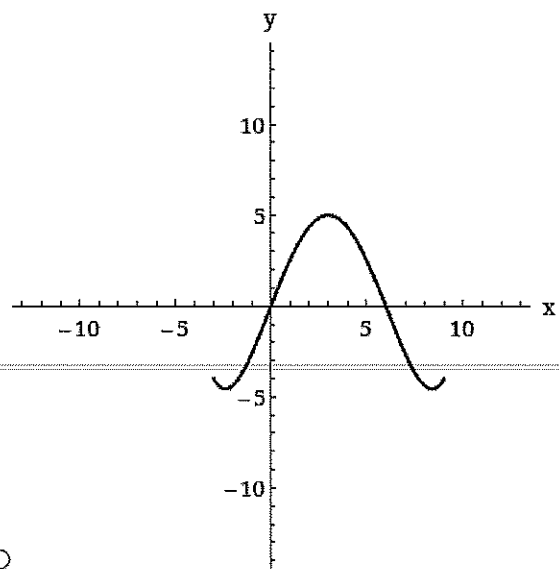
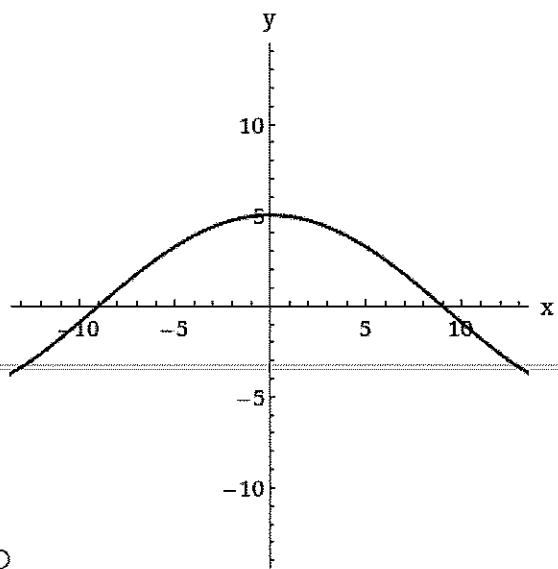


(f)  $y = f(x) - 6$





(g)  $y = f\left(\frac{1}{3}x\right)$



11.

DETAILS

LARPCALC10 3.2.016.MI.

MY NOTES

ASK YOUR TEACHER

Evaluate the logarithm at the given value of  $x$  without using a calculator.

**Function**      **Value**

$$f(x) = \log_{64}(x) \quad x = 4$$

12.

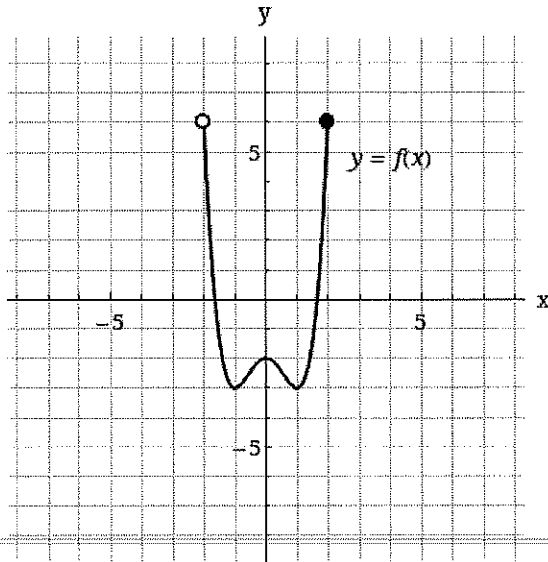
DETAILS

LARPCALC10 1.5.007.

MY NOTES

ASK YOUR TEACHER

Use the graph of the function to find the domain and range of  $f$ . (Enter your answers using interval notation.)



domain

range

Use the graph to find the indicated function values.

(a)  $f(-1) =$

(b)  $f(0) =$

(c)  $f(1) =$

(d)  $f(2) =$

13.

DETAILS

LARPCALC10 2.3.011.

MY NOTES

ASK YOUR TEACHER

Use long division to divide. (Simplify your answer completely.)

$$(4x^2 + 23x + 15) \div (x + 5)$$

,  $x \neq -5$

14.

DETAILS

LARPCALC10 2.7.021.

MY NOTES

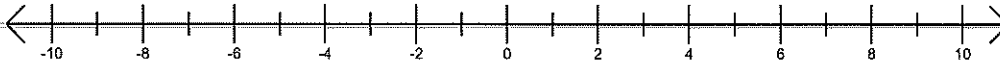
ASK YOUR TEACHER

Solve the inequality. (Enter your answer using interval notation.)

$$x^2 + x < 2$$

Graph the solution set.

Use the tools to enter your answer.



NO SOLUTION

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**WebAssign** NumberLine

[Help](#)

Consider the following.

$$g(x) = \frac{1}{6-x}$$

(a) State the domain of the function.

- all real numbers  $x$  except  $x = 1$
- all real numbers  $x$  except  $x = 6$
- all real numbers  $x$
- all real numbers  $x$  except  $x = -1$
- all real numbers  $x$  except  $x = -6$

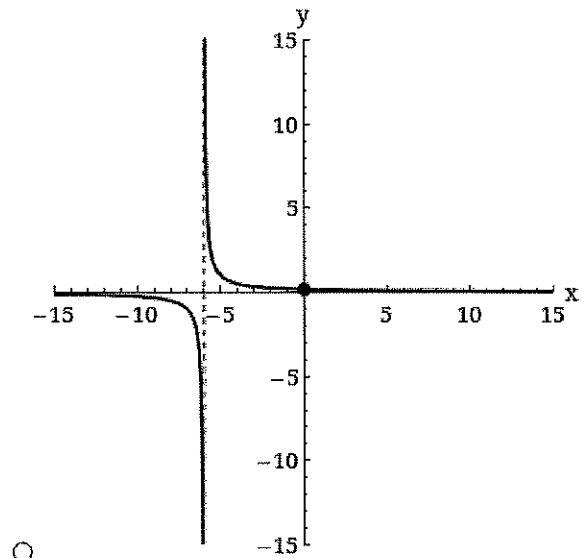
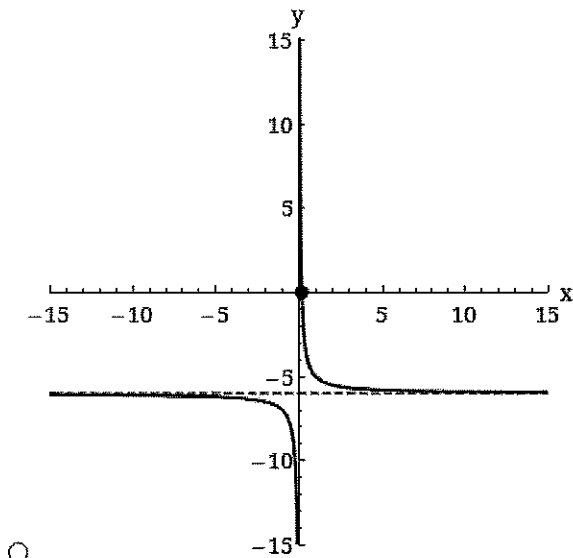
(b) Identify all intercepts. (If an answer does not exist, enter DNE.)

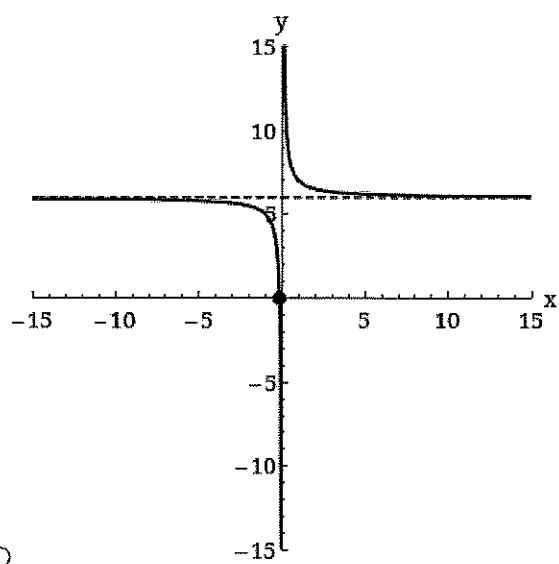
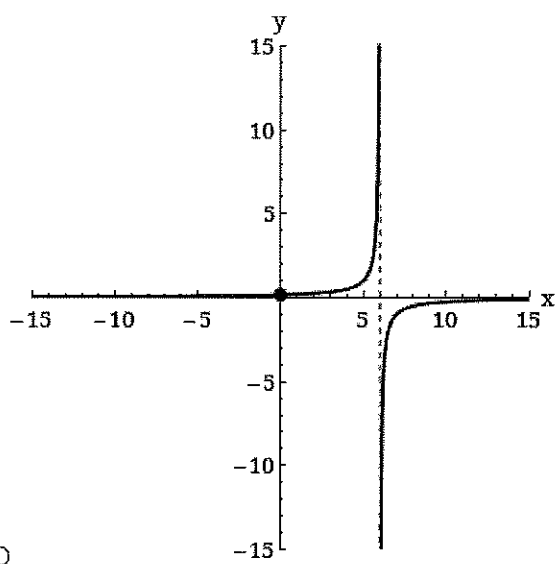
$(x, y) = ($   
 x-intercept   
 $)$

$(x, y) = ($   
 y-intercept   
 $)$

(c) Find any vertical and horizontal asymptotes. (Enter your answers as a comma-separated list of equations. If there are no asymptotes, enter DNE.)

(d) Plot additional solution points as needed to sketch the graph of the rational function.





16.

DETAILS

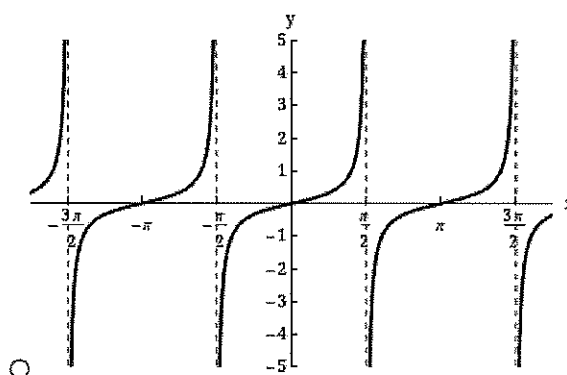
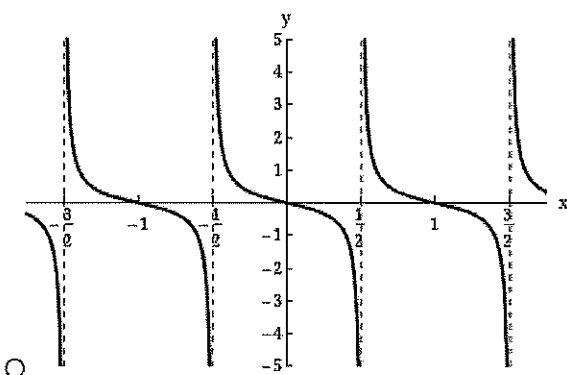
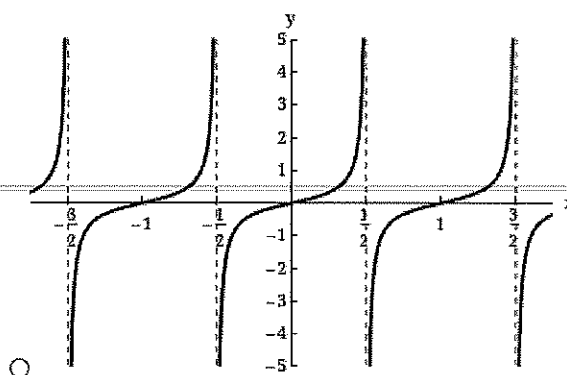
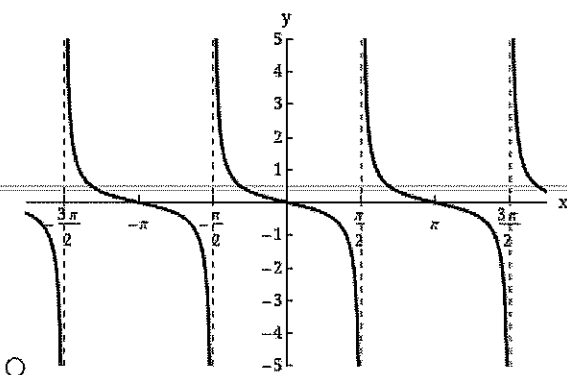
LARPCALC10 4.6.016.

MY NOTES

ASK YOUR TEACHER

Sketch the graph of the function. (Include two full periods.)

$$y = -\frac{1}{3} \tan x$$



17.

DETAILS

LARPCALC10 1.8.012.

MY NOTES

ASK YOUR TEACHER

Find the following.

$$f(x) = \frac{7}{x}, \quad g(x) = \frac{1}{x^2 - 1}$$

(a)  $(f + g)(x) =$  \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(b)  $(f - g)(x) =$  \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(c)  $(fg)(x) =$  \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(d)  $(f/g)(x) =$  \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What is the domain of  $f/g$ ? (Enter your answer using interval notation.)

18.

DETAILS

LARPCALC10 5.5.016.MI.

MY NOTES

ASK YOUR TEACHER

Use a double-angle formula to rewrite the expression.

$$7 \sin x \cos x$$

19.

DETAILS

LARPCALC10 4.7.049.

MY NOTES

ASK YOUR TEACHER

Find the exact value of the expression, if possible. (If not possible, enter IMPOSSIBLE.)

$$\arcsin \left[ \sin \left( \frac{7\pi}{3} \right) \right]$$

20.

DETAILS

LARPCALC10 5.3.016.

MY NOTES

ASK YOUR TEACHER

Solve the equation. (Enter your answers as a comma-separated list. Use  $n$  as an integer constant. Enter your response in radians.)

$$3 \cot^2 x - 1 = 0$$

 $x =$ 


21.

DETAILS

LARPCALC10 1.4.020.

MY NOTES

ASK YOUR TEACHER

Find the function value, if possible. (If an answer is undefined, enter UNDEFINED.)

$$V(r) = \frac{4}{3}\pi r^3$$

(a)  $V(3)$

(b)  $V\left(\frac{3}{2}\right)$

(c)  $V(2r)$

22.

DETAILS

LARPCALC10 6.2.020.

MY NOTES

ASK YOUR TEACHER

Use the Law of Cosines to solve the triangle. Round your answers to two decimal places.

$$B = 75^\circ 20', a = 9, c = 7$$

 $b =$  
 $A =$    $^\circ$ 
 $C =$    $^\circ$

23.

DETAILS

LARPCALC10 2.4.041.

MY NOTES

ASK YOUR TEACHER

Write the complex conjugate of the complex number.

$$-1 - \sqrt{7}i$$

Multiply the number by its complex conjugate. (Simplify your answer completely.)

24.

DETAILS

LARPCALC10 6.1.018.

MY NOTES

ASK YOUR TEACHER

Use the Law of Sines to solve the triangle. Round your answers to two decimal places.

$$A = 60^\circ, a = 8, c = 6$$

$$B = \text{[input]}^\circ$$

$$C = \text{[input]}^\circ$$

$$b = \text{[input]}$$

25.

DETAILS

LARPCALC10 4.3.012.

MY NOTES

ASK YOUR TEACHER

Find the exact values of the six trigonometric functions of the angle  $\theta$  shown in the figure.

$$\sin(\theta) =$$

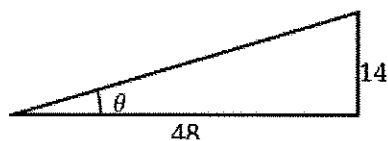
$$\cos(\theta) =$$

$$\tan(\theta) =$$

$$\csc(\theta) =$$

$$\sec(\theta) =$$

$$\cot(\theta) =$$



26.

DETAILS

LARPCALC10 3.3.014.

MY NOTES

ASK YOUR TEACHER

Use the properties of logarithms to write the logarithm in terms of  $\log_7(2)$  and  $\log_7(3)$ .

$$\log_7\left(\frac{2}{3}\right)$$

27.

DETAILS

LARPCALC10 2.4.032.MI.

MY NOTES

ASK YOUR TEACHER

Perform the operation and write the result in standard form.

$$(6 - 5i)(3 - 6i)$$

28.

DETAILS

LARPCALC10 2.5.015.

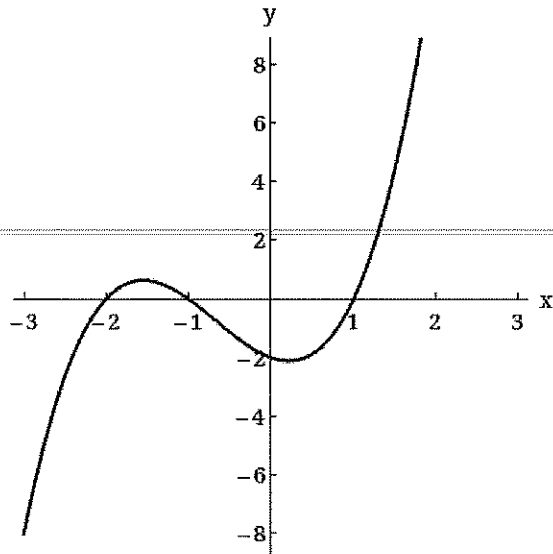
MY NOTES

ASK YOUR TEACHER

Use the Rational Zero Test to list the possible rational zeros of  $f$ . Verify that the zeros of  $f$  shown on the graph are contained in the list.  
(Enter your answers as a comma-separated list.)

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

$x =$



29.

DETAILS

LARPCALC10 4.4.014.

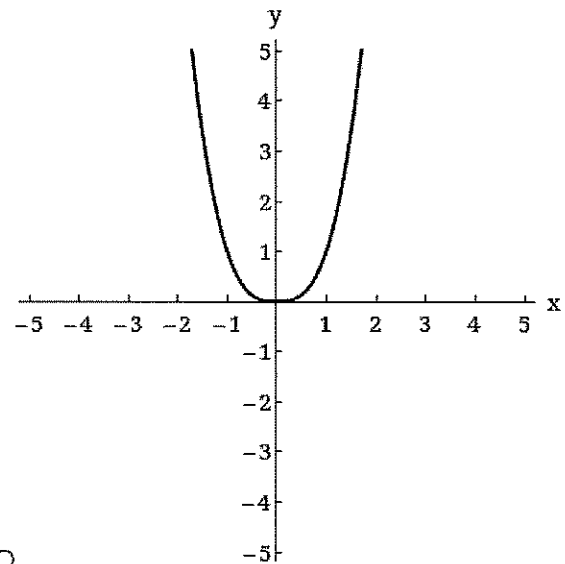
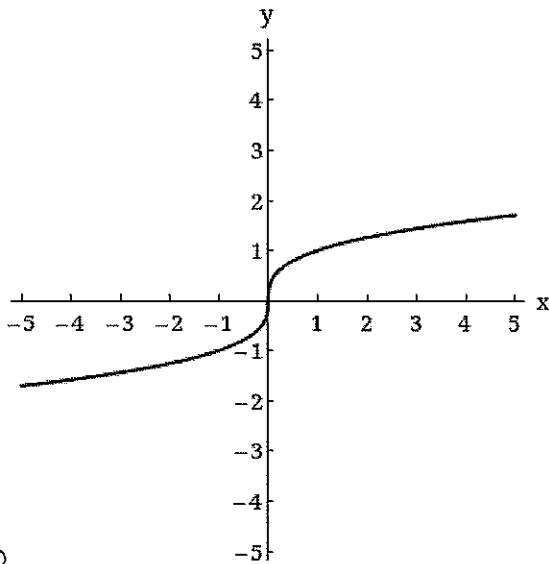
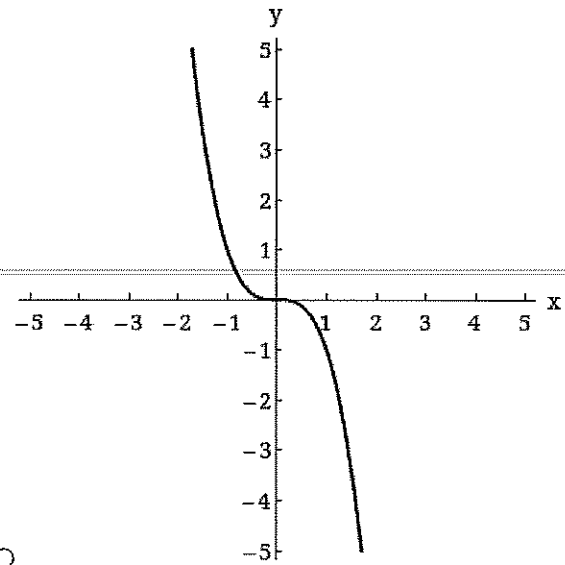
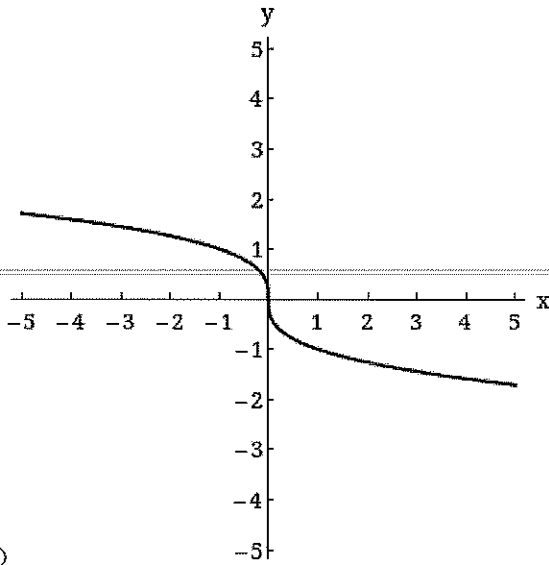
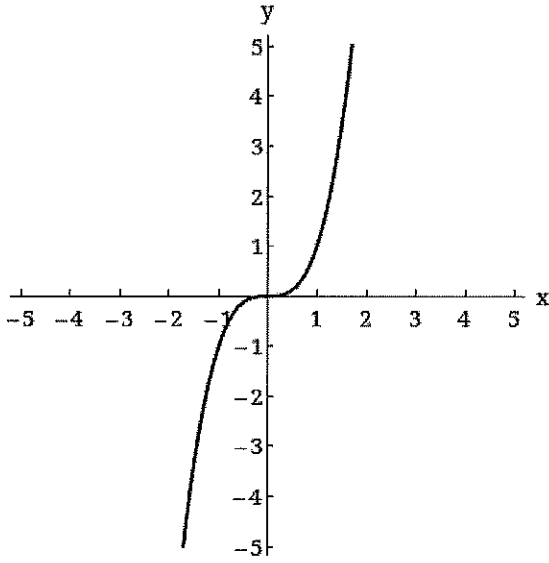
MY NOTES

ASK YOUR TEACHER

The point is on the terminal side of an angle in standard position. Find the exact values of the six trigonometric functions of the angle.

 $(9, 40)$  $\sin \theta =$  $\cos \theta =$  $\tan \theta =$  $\csc \theta =$  $\sec \theta =$  $\cot \theta =$

Use the graph of the function to sketch the graph of its inverse function  $y = f^{-1}(x)$ .




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